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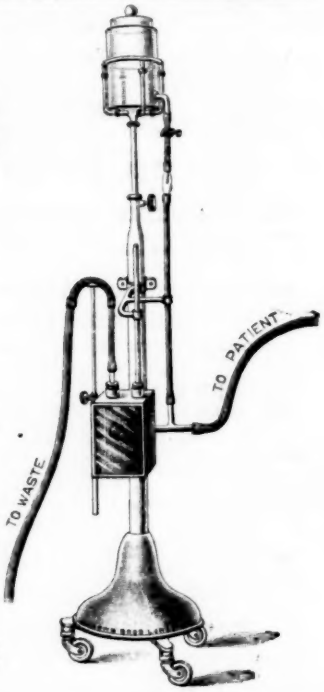

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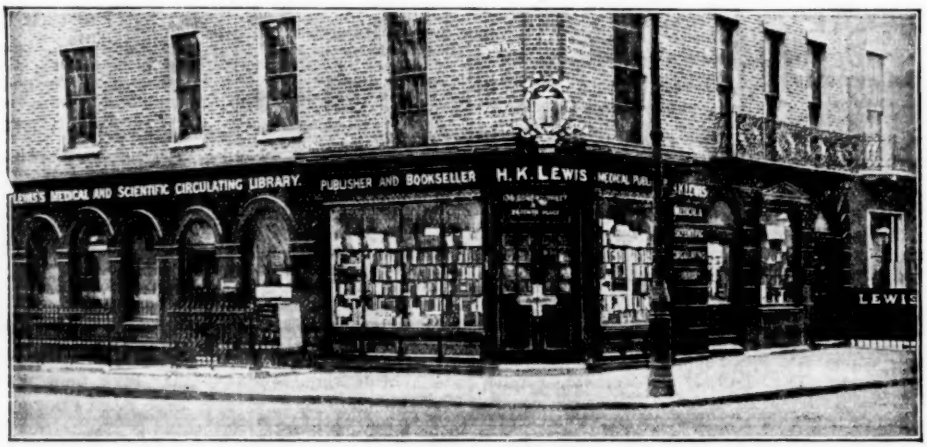

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Delivered before the Royal College of Physicians of London on March 14th, 19th, and 21st, 1918,

BY G. F. STILL, M.A., M.D. CANTAB., F.R.C.P. LOND.,
PROFESSOR OF DISEASES OF CHILDREN, KING'S COLLEGE, LONDON; PHYSICIAN FOR DISEASES OF CHILDREN, KING'S COLLEGE HOSPITAL; PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.

LECTURE I.

MR. PRESIDENT AND FELLOWS,—One cannot but regard it as an honour to deliver before this our College the Lumleian lectures; but one undertakes the duty with some trepidation, being only too conscious that the privilege carries with it the responsibility of upholding the high tradition which has come down to us from the Lumleian lecturers of more than three centuries.

INTRODUCTORY.

The disorder which I have taken as my subject I shall consider under the title of "Cœliac Disease," the name under which it was originally described by a late distinguished Fellow of this College, Dr. Samuel Gee.

In this first lecture I shall deal chiefly with symptomatology, and I shall assume, only as a working hypothesis, and without any intention of prejudging the question, that in the combination of symptoms which has been called by this name we are dealing with a specific disease. In my second lecture, in which I shall consider the pathological aspect, I shall discuss this important question of specificity, and, finally, in my third lecture, I shall consider treatment.

There is little to be said of historical nature owing to the fact that until Dr. Gee's observations[1] were published in 1888 the condition had apparently not been recognised, or, at any rate, had not been described, as a clinical entity. Since that date remarkably little has been written about it, and that little seems to have attracted no general attention, largely, perhaps, because different observers have described the condition under different names.

The late Dr. Cheadle[2] in 1903 included it under the heading of "acholia"; in 1908 Dr. Herter,[3] in America, called it "intestinal infantilism"; and in 1913 Drs. Poynton, Armstrong, and Nabarro[4] published a valuable study of this affection as "A Group of Cases of Chronic Recurrent Diarrhœa in Childhood."

Its rarity also has no doubt had something to do with the scantiness of its literature.

During the past five years at the Children's Hospital, Great Ormond-street, amongst 14,800 admissions of children under 12 years of age there were only 17 cases of "cœliac disease." Figures, however, taken from a hospital do not perhaps altogether give a reliable idea of the frequency of its occurrence, for this is one of those affections which for some reason, difficult to ascertain, seems to be more rare amongst hospital patients than amongst those seen in private practice. I find that of cases under my own observation 17 were seen at hospital, whereas 24 came to me in the ordinary course of consulting practice.

This point may not be without its significance as to etiology, for I think we may safely infer from it that the condition is not one of those specially incidental to poverty or to lack of hygienic surroundings.

Further, inasmuch as the diarrhœa of infancy and early childhood is undoubtedly closely related to both these factors, the cœliac affection presumably is not a mere variation or outcome of the ordinary diarrhœa of infancy.

Dr. Gibbons,[5] in his article on cœliac disease, expresses this view, which I think most clinicians must have held who are familiar with the diarrhœal affections of infancy and early childhood.

He says: "It is distinctly not the disease known as chronic diarrhœa of children." It is, however, easier to make such an assertion than to prove it or even to define exactly what is meant by it. Diarrhœa is a symptom not a disease, and in so far as cœliac disease is both diarrhœal and chronic it clearly is a chronic diarrhœa of childhood; nevertheless, the character of the diarrhœa and the associated symptoms make up a clinical picture which many observers have regarded as something *sui generis*, and have therefore suspected of a specific cause; only when this can be demonstrated will it be possible to say positively that cœliac disease is entirely separable from other diarrhœal affections of infancy and early childhood. In the meantime, if in addition to the characteristic grouping of symptoms this disorder can be shown to have etiological factors which are not common to other diarrhœal diseases, we shall have gone some way towards defining its position.

INCIDENCE.

A remarkable fact which comes out of my own series of cases is the much greater frequency in girls than in boys; out of 41 cases 30 were girls, 11 were boys.

I have no explanation to offer for this, but if it be confirmed by larger figures it raises once again a problem which has always seemed to me exceedingly interesting—namely, the sex incidence of disease. Why congenital hypertrophy of the pylorus or idiopathic dilatation of the colon should occur far more often in boys than in girls, or even why hysteria should be more common in women than in men is mysterious enough, but it seems, if possible, more surprising that an infective condition—if, indeed, cœliac disease is to be regarded as such—or a functional digestive disorder, if that view be more correct, should affect the female so much more often than the male.

The age at onset is, in the majority of cases, the later part of infancy, between the age of 9 months and 2 years. The earliest in my series was 8 months, the latest 4½ years. Only 2 other cases began as late as 3-4 years of age.

Several, however, were first seen by me when they had already reached the age of 3-7 years and the disease had already been present for some years. Indeed, it is by no means easy to be sure of the date of onset in some cases as the disorder may begin quite insidiously. As far as I have been able to ascertain, in no case did the disease begin while the child was still on breast-feeding. In some cases the onset has been with an attack of diarrhœa, which does not seem to have been particularly severe in character, but diarrhœa is not a necessary antecedent, for, as Gee pointed out, costiveness is sometimes a forerunner of the disorder; in three cases there was only vomiting at first. In some the first symptom which seems to have caused anxiety was wasting.

CLINICAL PICTURE.

The clinical picture of "cœliac disease" when it has already lasted for two or three years is sufficiently striking.

The child is pale and emaciated, although, as Gee observed, the face sometimes remains full and apparently plump even at a late stage of the disease. The large abdomen contrasts with the wasted limbs, and the general appearance is that of tuberculous peritonitis, for which cœliac disease is apt to be mistaken. The most striking feature is the surprising inconsistency of the child's size with its age. What appears to be an infant little more than 12 months old startles one by unexpectedly talking, and so reveals the fact that it is at least a year or two older, perhaps 3 or 4 years older, than its appearance would suggest.

On inquiry it is found that the child's stools, though not more than one or two a day, have almost never been formed since the illness began, and that they are generally pale or the colour of oatmeal. At intervals of a few weeks the stools become more loose and frequent, perhaps three or four a day instead of one or two. These recurrent bouts of increased looseness are very characteristic of the disease.

The weight, moreover, though it fluctuates, has made no permanent advance for many months, or even for a year or two; and the net outcome of its variations may even have been a loss of 2 or 3 ounces in as many years.

So the disease drags on for months and years.

Wasted and feeble, the child passes an invalid existence with intervals of improvement followed by a relapse, until, as a result of rigorous dieting, the stools gradually became more normal, and the child eventually struggles back to health, able to take food more or less like other people, but handicapped in growth by the lost time during which the development has been arrested. Even such a favourable result, however, is not to be expected in all cases, for the relapses with increased looseness of the bowels are exhausting, and may end fatally.

SYMPTOMS.

From this preliminary sketch of a case of "cœliac disease," I pass to more detailed consideration of the symptoms.

Diarrhœa.—The early history of these cases is obviously of importance in determining the pathology of the disease.

In a considerable proportion, 8 out of 20 of those in which the onset was more or less defined, there was a history of an attack of diarrhœa with or without sickness at the onset, and since then the stools had never been normal except occasionally, perhaps, for a day or two.

Prima facie this sequence would suggest that the initial diarrhœa and the subsequent looseness of the bowels and recurrent exacerbations of looseness, were due to an infection which had never been entirely thrown off by the bowel, and it might even be conjectured that any diarrhœa of infective origin might lead to such a disorder.

On this account I want to lay stress particularly upon the fact already noted, and particularly observed by Dr. Gee, that diarrhœa is not a necessary antecedent. In 3 out of those 20 cases the mother declared that the bowels had "always been loose"; there was no particular attack of diarrhœa. In 4 out of the 20 the onset had been entirely insidious, with wasting, and in one at least of these there had been constipation at first, with wasting, until after weeks or months the bulky and pale character of the stools and their looseness became pronounced.

Infantile scurvy.—A curious fact which appears in my series of cases is the occurrence of "infantile scurvy" as the antecedent of "cœliac disease" in a proportion of the cases, too large, I think, to be entirely accidental; 4 out of my total series of 41 cases had "infantile scurvy" just before or during the onset of "cœliac disease."

Inasmuch as infantile scurvy is also a comparatively rare disorder, its association as an antecedent with cœliac disease in a proportion so high as nearly 1 in 10 is at least noteworthy. I would mention here, as a possibly correlated fact, the ease with which these children fall victims to scurvy as a result of the diet used for the treatment of the disease. It may be that infantile scurvy conduces in some way to diarrhœal affections; certainly experience teaches caution in its treatment on account of this particular tendency. Quite apart from the fact that the passing of blood from the bowel in scurvy shows that the mucosa is in some way affected, there are clinical phenomena which suggest very strongly that the deficiency of vitamines which produces scurvy produces also a lowered resistance to infection. It may be that in this way the food factors which lead to scurvy predispose also to cœliac disease.

Stools.—Quite early in cœliac disease the stools show characteristic qualities:—

They are bulky, pale, creamy, unformed, pultaceous, resembling more or less closely well-boiled porridge, except that they look more glistening and greasy than porridge does; the smell, too, is very offensive, fatty and sour, perhaps rancid best describes it; the reaction is markedly acid and the stool floats in water.

But while such is the typical stool I would point out that there is much variation from time to time; sometimes for a few days the stools are pale yellow, or even brown; sometimes they are white and shreddy; occasionally the child will pass a formed stool, differing little from the normal except in its pale drab or fawn colour.

A point, however, which I think has not been sufficiently recognised is the change in the character of the stool which tends to occur as the disease becomes of longer standing.

The white porridgy stools which were usual during the first year or two of the illness become less and less a constant feature until the evacuations quite as often consist of shreddy or soft fæcal material pale grey or greenish or even dark brown, mixed with mucus, which in rare instances may even show a trace of bright red blood. In one advanced case pus was found in the stool, during one of the bouts of looseness. Occult blood has been found occasionally even in the earlier stage of pale porridge-like stools.

In some cases the parents themselves have particularly noticed the change in the character of the stools after the disease has lasted some years. I lay some stress upon this point not only because the absence of the typical porridgy character of the stool might mislead diagnosis in an advanced case, but also on account of its probable bearing upon the significance to be attached to changes found in the bowel at post mortem. It suggests that lesions found at that stage may be of secondary origin; I mean that inflammatory and perhaps ulcerative changes in the lower part of the bowel may be secondary to unhealthy conditions in the upper part.

With the unhealthy condition of the stools there is associated distension of the abdomen, which forms one of the characteristic features of the disease. In cases that do badly this sometimes becomes so extreme as to cause considerable distress to the child before the fatal termination: in cases that do well it is one of the last symptoms to disappear.

The *absence of vomiting* in most cases, except as an uncommon incident, seems to indicate that the condition is rather an intestinal than a gastric disorder.

Pain there is usually none, and when it has been present has been only a slight transient discomfort such as might be produced by flatulence. To this statement exception must be made of the severe pain which has occurred a day or two before death; this was noted by Drs. Poynton, Armstrong, and Nabarro in their fully recorded fatal case, and autopsy showed no explanation of the pain. It occurred also in a girl under my observation, but no autopsy was made, so its cause was uncertain.

Cœliac disease is not accompanied by fever.

Urine.—The urine I have examined in many cases without finding anything abnormal.

Having regard to the extremely offensive smell of the stools, one might have expected to find indican present in considerable quantity, and sometimes this has been observed; it is not, however, a constant feature.

In one case a trace of albumin was present in the urine at repeated examinations; in another, a girl in whom the disease had been present for nearly six years, there was a considerable cloud of albumin and some hyaline and granular casts, evidently indicating a certain degree of actual renal irritation, though there were no other symptoms to point to it. There is nothing surprising in this when one remembers that slight albuminuria is no great rarity with intestinal disorders, particularly diarrhœal affections, in infancy and early childhood. It is perhaps only remarkable that with such persistent disorder, associated for years, as I shall show, with evidence of toxæmia, there should not more often be evidence of renal irritation.

Liver.—There is no enlargement of the liver. I have thought, indeed, that the reverse is rather a feature of the disease.

The edge of the liver is usually not to be felt below the costal margin. Considering the frequency with which the liver is easily palpable in children, especially in those under 5 years of age, one is the more struck by the failure to feel it at all in a large proportion of cases of cœliac disease. Whether the organ is actually diminished in size is difficult to ascertain by clinical examination. I have tried in some cases to settle this question by percussion, and I show here some figures which prove that at any rate the hepatic dullness is diminished.

Vertical Measurements of Liver Dullness in Right Nipple Line.

Cœliac.		Normal.		Cœliac.		Normal.	
Age.	Liver.	Age.	Liver.	Age.	Liver.	Age.	Liver.
—	—	9 wks.	4·25 cm	3½ yrs.	4·5 cm.	3½ yrs.	11·5 cm.
—	—	8 mths.	7·5 ,,	—	—	5 ,,	8·5 ,,
—	—	16 ,,	5·75 ,,	—	—	6 ,,	8·5 ,,
—	—	21 ,,	9·0 ,,	6¼ yrs.	6·5 cm.	6½ ,,	9·25 ,,
3 7/12 yrs.	4·5 cm.	3½ yrs.	10·0 ,,	7 ,,	4·75 ,,	7 ,,	9·5 ,,
3¼ ,,	4·25 ,,	3½ ,,	9·5 ,,	8 ,,	5·5 ,,	7 ,,	7·0 ,,

I shall refer to this again in discussing the pathology of the disease; here I should like to mention that it is one small point in the diagnosis from abdominal tuberculosis and syphilis, in which the liver is more often easily palpable.

The *spleen* also is usually not to be felt, a fact which may be of importance if the possibility of congenital syphilis is in question, and I shall later mention observations which would seem to render this question pertinent.

Blood changes.—The pallor, which is always a more or less marked feature of the disease, is found to be associated chiefly with a deficiency of hæmoglobin in the blood, but not of any profound degree.

In a severe case, a girl aged 3½ years, the count was as follows: Red blood corpuscles, 3,450,000; white cells, 12,500; hæmoglobin, 50 per cent.; colour index, 0·7. Differential count per cent: Polymorphs, 59·5; lymphocytes, 35; large mononuclear, 2; basophiles, 0·5; transitionals, 3·0; no abnormal cells.

Another, a girl aged 6¼, showed red corpuscles 4,500,000, white corpuscles 15,825, hæmoglobin 58 per cent., colour index 0·6. Differential count per cent.: Polymorphs 70·5, lymphocytes 26, large mononuclear 0·5, eosinophiles 0·5, basophiles 0·5, transitionals 1·0, one normoblast in 200 cells.

In another, a girl aged 5¼, the red corpuscles were 5,300,000, white cells 8750, hæmoglobin 40 per cent., colour index 0·3. Differential count per cent.: Polymorphs 45, lymphocytes 49, large mononuclear 5, eosinophiles 1.

In all these cases there was marked pallor, so that one was surprised at the slightness of the blood changes. This absence of any profound disturbance in the blood is particularly noteworthy in relation to the occurrence of œdema, to which I shall refer later; presumably we must look elsewhere than to hydræmia for an explanation of this symptom.

The only constant blood change shown by these few observations is deficiency of hæmoglobin, a change which may be related to the failure of fat absorption, which, as I shall show, is one of the features of this disease; for it has been shown that a similar picture results from the experimental use of a diet very deficient in fats. A pig fed thus showed after many weeks only 65 per cent. of hæmoglobin, whereas the blood cells were only very slightly reduced in number. (Herter.[6])

The *arrest of development* is one of the most striking features of the disease, and this is not merely a cessation of gain in weight but also a cessation of growth, a point which distinguishes it from the atrophic conditions which result from various disorders of digestion in early life.

It is common enough for an infant to become thin or even emaciated with evident symptoms of indigestion and unhealthy stools and to suffer in this way for months, and yet at the same time to grow even rapidly in length, whereas, in the child with cœliac disease growth in length seems to be arrested from a very early stage, if not from the onset, of the illness. Moreover, it is clearly not dependent entirely, if at all, upon the general failure of nutrition, for months after increase in weight has been established there is still little or no gain in length; this seems to come later.

The following figures will give some idea of the deficiency in weight shown by these children.

A girl aged 23 months, when the weight should have been 27 lb., weighed 7 lb. 2 oz.

Another at the age of 3 years 5 months weighed 14 lb., the weight of a child of 5 months.

A girl aged 5½ years weighed 21 lb., the average weight of an infant of 12 months.

The arrest of growth in height can be appreciated from the following measurements.

The girl mentioned above, aged 3 years and 5 months, measured 33 inches in length, instead of the normal 36 inches.

Another at 5 years was 33 inches; the normal at this age is 41 inches.

Another at 6 years was 37⅛ inches (6 inches below the normal), the height of a child of 3½ years. Her sister, a healthy but unusually tall child of 2½ years, was said to be exactly the same height.

A girl, aged 17½, was 55⅝ inches, the height of a child of 12 years.

As the arrest of growth in stature has been attributed to deficient assimilation of calcium consequent upon the failure of fat absorption, it seemed worth while to investigate the condition of the bones by X ray examination to see whether any failure of calcification could be detected.

I had skiagrams taken of the limbs in three cases. In all these cases the bones were unduly small, corresponding to the small stature of the child, but none showed any abnormality in the formed bone, the trabecular structure was well marked and the outer layer appeared to be normal in thickness and density. They all showed, however, a marked departure from the normal for the age in respect of the centres of ossification in the epiphyses. These corresponded not to the real age of the child but to that of one much younger, roughly one might say to the apparent age of the patient.

There is in these skiagrams a notable absence of the usual appearance of rickets, a fact which seems to show that if deficient calcium absorption is the cause of the arrested growth in cœliac disease, then something further is necessary to the causation of rickets.

A noticeable feature, which no doubt is to be explained as part of the arrest of growth, is the smallness of the voice in most of these cases.

It tends to high pitch and very limited compass, characters due probably to the smallness of the larynx. This feature, however, is in curious contrast with the rather gruff voice which obtains in some other conditions where growth is delayed—for instance, mongolism and cretinism.

One might have expected that there would have been delay in dentition as one result of the general interference with nutrition.

This is so to some extent, but not to any such marked degree as one might have expected from the delay of development in other respects.

In one case, where the disease began at 9 months, there were only six incisors and three molars at 22 months, and in other cases, where

the disease had begun at about a year old, I have noted that only 12 or 13 teeth were present at the age of 2 years.

The delay is not due to any accompanying rickets. It is, indeed, a remarkable fact that rickets is rarely found in spite of the long-enduring disturbance of nutrition produced by cœliac disease.

Muscular feebleness.—Gee and most other writers have drawn attention to the muscular feebleness of these children.

One of my cases, mentally normal, perhaps indeed rather precocious, was not able to walk until she was 6¼ years old. Another, in whom the disease began at 1 year, first stood alone at 3 years and 8 months.

Dr. Gee says that even when recovery tends to be complete, a peculiar weakness of the legs is left long after all other tokens of disease have passed away, a weakness which shows itself in that the child is unable to jump.

The *mental capacity* of these children does not seem to be affected.

They remain capable of as much development ultimately as other children, but in the meantime they show rather the mental development which is normal for a child of their size than that which is normal for a child of their age.

Apart from this the intelligence is, at least, not impaired by the disorder, nor are dull or imbecile children particularly liable to it; indeed, there is not one such among my series of cases.

Whilst, however, the intelligence is quite good in these children they often show a curious slowness in response, as if they weighed one's question carefully before replying. I have thought that this was most noticeable when, with much wasting there was marked pallor, and it seems reasonable to suppose that such a condition must exercise some effect upon the brain as upon other tissues.

As a result of the general weakness the child is usually very quiet and apathetic, taking but a languid interest in toys and picture books.

With improvement in the stools, however, the child soon begins to take more interest, though for a long time, even for some years in cases, it is quieter and less vigorous in its movements than a healthy child.

There is one subject in which almost all children with cœliac disease show a pathetic interest—namely, their food; often, indeed, it is their one subject of conversation, and this is hardly to be wondered at in view of the meagre dietary which forms a necessary part of the treatment, not for weeks but for years.

Complications.—In the course of the illness various complications are apt to arise. One of the most frequent—so frequent, indeed, as almost to be a symptom of the disease—is *œdema* more or less general, though seldom of more than moderate degree.

It is most notable usually in the hands and legs and feet, but the face also has a puffy appearance, especially about the lower eyelids. As part of this dropsy there is sometimes a definite ascites, and this may be more obvious than the slight general œdema. In one case under my observation it had led to a diagnosis of tubercular peritonitis of the ascitic form, for which laparotomy was to have been performed on the day following that on which I saw the child.

Tetany occurred in 3 of my series.

In one case it occurred after the disease had been present about six months, in another after it had been present two years, in another after it had been present about eight years.

In this last case, the girl of 17½ whom I have mentioned before, the tetany recurred for several years and at times it came on almost daily in the afternoons, and at one time the pain was so severe that it was necessary to give chloroform.

Purpura occurred in several cases.

In some it occurred as part of the terminal condition when emaciation had become extreme and such a development might be expected, but in others patches of purpura appeared when the child was rather improving than otherwise, and was well enough to be up and about.

In one girl, for instance, purpura appeared many times from the age of 2½ until the child died of the cœliac disease at the age of 9½ years.

In another patches of purpura were still occurring when the boy had improved so much that he was gaining weight rapidly and had already become fat; a clear proof that the purpura is quite independent of emaciation.

A complication due rather to the treatment than to the disease was *scurvy*, which occurred in 5 cases between the ages of 3 and 7 years. In 2 of these there had been scurvy also preceding the onset of the disease.

The first evidence of scurvy is usually pain in the limbs, and with the knowledge that the diet used for the treatment of cœliac disease is very deficient in antiscorbutic elements the cause of the pains can be recognised early and obviated by relaxing the strictness of the diet either by allowing potato or by increasing the allowance of fruit juice if any has already been given.

But I have seen other cases in which there was complaint of pains in the limbs which did not respond to antiscorbutic treatment and which remained obscure in their origin. One wonders how far these pains may be related to the low proportion of fat allowed in the diet. Certain fats, including milk fat, contain, as recent observations have shown, a vitamine which, though differing in its effects from the antiscorbutic vitamine, has important effects on growth and nutrition. The pains seem to be referred to the bones of the limbs. Is it possible that they are an early symptom—usually not carried further—of those changes which have been miscalled late rickets? I mention this because in one of my cases this complication actually developed.

The patient, a girl, had been kept for four years on a diet containing a minimal proportion of fat and was apparently recovering from the cœliac disease when, at the age of 8 years, her legs began to bend rapidly, so that much distortion occurred, crippling the child.

In one case only, the case in which the disease was still present at 17½ years, there was a *chronic glossitis*.

The tongue was completely bald, almost glazed, with deep fissured ulcers at its margin; it was so sore that at times the girl was unable to eat solids, and the soreness and ulceration had been present in greater or less degree for some years. The only affections of the tongue which I have noted in other cases were in two a tendency to ordinary aphthous ulcers, and in one annulus migrans.

SIMILARITY TO SPRUE.

I would lay some stress upon this occurrence of severe chronic glossitis, for it bears upon a point which I want to consider now, the resemblance of cœliac disease to sprue.

It seems to have been taken for granted by Dr. Gee that there was not merely resemblance but identity. In his original paper he says: "Sometimes from India Englishmen return sick with the cœliac affection," evidently referring to the condition known as "white diarrhœa" or sprue.

Dr. Cheadle, without committing himself to their identity, was evidently inclined to group them both in his category of "acholia." "The condition," he says, "of the stools in the two forms is absolutely identical, some of the symptoms, notably the appetite for food, are different."

There are obvious points of similarity:—

Both are characterised by looseness of the bowels, which persists usually for years; in both there are recurring exacerbations of the looseness; in both the stools are bulky, pale, whitish, usually acid, peculiarly offensive, and on analysis show excess of fat.

In sprue the small size of the liver has been specially noted by Dr. Charles Begg.[7] "The liver dullness," he says, "is always diminished in a pure case of sprue, often greatly so, and this is one of the diagnostic signs of the disease." I have already pointed out that this is noticed in cœliac disease also. In both there is marked abdominal distension with much general wasting and feebleness; both disorders are free from fever. The one symptom which seemed lacking to complete the resemblance is the sore tongue which is so characteristic of sprue. It was not until I came across the case just mentioned that I found that this feature also occurs in cœliac disease as well as in sprue.

The remarkable sex incidence of cœliac disease may be another point of resemblance.

Some observers state that sprue has no special sex incidence, but Mense,[8] in his handbook of tropical diseases, quotes two Dutch writers who independently state that females are much more prone to sprue than males, and Jefferys and Maxwell, in their "Diseases of China" (1910), say "the female sex is far more predisposed to this disease than the male sex."

Amongst my cases is one which is at least noteworthy in this connexion. The child was born in India, where at the age of 9 months she began to suffer with cœliac disease, which she still had when she first came under my care at the age of 5½ years. The child was a most typical case of cœliac disease; the mother was at the same time ill with sprue, also acquired in India, and was under treatment by some of the authorities for tropical disease.

Clearly the identity of these disorders cannot be affirmed until a specific cause common to both has been established, but in the meantime the clinical resemblance is, I would submit, sufficiently striking to justify raising the question.

PROGNOSIS.

The course of cœliac disease is always slow and tedious. I have never seen a case in which complete recovery could be said to have occurred until at least a year or two had elapsed since the onset. It is, however, impossible to assign any exact date of recovery, for it is only very gradually that the ability to digest ordinary food is restored and therewith the stools resume a normal character, and even then there remains for a long while the stunted growth.

As happens with most diseases which last for years, these cases tend to pass out of the care of one medical man to that of another, so that it is difficult to keep track of them, but such records as I have been able to obtain are sufficient to show how protracted this disease may be.

One girl, in whom the symptoms dated from about 9 months, weighed 21 lb. at 5½ years, and was only improving at the age of 6½, and died at about 9 years of age.

Another, in whom cœliac disease began at about 20 months old, was seen by me at intervals with relapses following temporary improvement until she died with an exacerbation of looseness and with distension of the abdomen at the age of 9½ years.

Another, a boy, who had been under treatment for cœliac disease from about 12 months of age, died when 8 years old.

Sometimes a fatal result comes earlier, a girl in whom the symptoms appeared at 21 months died of cœliac disease at 4 years.

Another girl in whom the disease began just under a year old died at the age of 21 months, but in this instance the termination was due apparently less to the disease than to an accidental complication, bronchopneumonia; and in another, a girl who had been under treatment for cœliac disease since the age of 14 months, a fatal ending at 2¾ years was due to a streptococcal pharyngitis which could only be regarded as an accidental occurrence.

These 6 cases out of the 41 under my own personal observation are the only ones that I know to have ended fatally, and if it is allowed that in 2 of these death was due to accidental complications rather than to the cœliac disease, it will be seen that it is at any rate a disorder that does not lead rapidly to a fatal ending. On the other hand, the proportion of cases in which complete recovery can be affirmed is not large.

In this same series only five could be said to have recovered in the sense that the stools were as regularly normal as those of a healthy child, and no special restrictions as to diet were any longer necessary, but all these five cases, though they had regained a good state of nutrition, had not nearly attained a normal height and looked years younger than their age.

The active phase of the disease had lasted, respectively, 2 years, 3½ years, 4 years, 4 years, and 6 years before this degree of recovery had been reached.

Each case was under my observation for a year at least and most of them for several years after the recovery, so that it would appear to be permanent.

There are other cases in which after long-continued treatment a sort of *modus vivendi* is reached, which, though it cannot be called recovery, might perhaps be described as permanent improvement.

I had almost described it in the late Sir James Goodhart's words as "Safe, but not sound," but I doubt if it can be regarded as altogether free from risk. The child's nutrition has steadily improved, it is able to take an ordinary diet with little or no special restriction. The stools, though normal in colour, are seldom formed and easily become loose; moreover, growth, though taking place, is unduly slow, and the child, though taking her part in ordinary child life, does so with more effort and is more easily fatigued than other children. Three of my series had recovered to this extent; one of them already referred to when last seen was 17½ years old.

Is there ever complete recovery in the sense of attaining eventually average height and acquiring normal puberty development?

With the exception of the one case which I was able to see at the age of 17½ years, in which neither of these conditions was fulfilled, I have not been able to watch any case sufficiently long to answer this question. I can only mention from hearsay two instances, one a boy and the other a girl, under treatment, I believe, by Dr. Gee and Dr. Cheadle for coeliac disease in early childhood, who in adult life were of at least average stature and seemed normal in every way. I have no knowledge, however, of the girl's menstrual history.

Two cases which I was able to feed on human milk have made so much better progress in growth than is usual in coeliac disease that they bid fair to reach at least an average height.

STUDY OF AN OUTBREAK OF BACILLARY DYSENTERY.

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AN outbreak of bacillary dysentery in an institution in the eastern counties in December and January last, described below, presented the following features which seem worthy of record: (*a*) sudden onset and brief duration; (*b*) evidence that the infection was water-borne; (*c*) the infecting agent was in all cases *B. Shiga*; (*d*) evidence of the persistence of Shiga bacillus when experimentally introduced into water and food; (*e*) noteworthy results of agglutination tests when applied both to dysentery convalescents and to those who had presumably been exposed to infection but had escaped illness.

Account of the Outbreak.

The institution in question was occupied by men engaged mainly in agricultural work in the neighbourhood.

At Christmas, 1917, there were about 360 men in this institution, all but three of whom had been there for two months, most of them since the building was taken into military use in August, 1917. The men had been selected as fitted for farm work; they were well nourished and in thoroughly good physical condition, and the sickness among them before Christmas, 1917, was negligible. The three later arrivals were healthy men, and no suspicion of previous dysentery arose in their case.

This institution stands in open country a mile or more from the nearest village. First built as a local workhouse, it was afterwards used as a home for inebriate women, and later for imbecile children. Its accommodation and arrangements were ample for the number of men for which it was used; it had fairly recently been supplied with a water-carriage system of drainage, and had its own water-supply from a deep well situated close to the main building, drawing water from the chalk at a level of about 100 feet from the surface. The institution was kept in a very cleanly condition, and sanitary discipline was well maintained.

As soon as the outbreak in question was reported, expert inquiry was arranged for, and was carried out by Captain B. Sweeten, R.A.M.C. (S.S.O. of the area), Captain J. D. Benjafield, R.A.M.C. (bacteriologist of the area), Captain S. Shepheard, R.A.M.C.(T.) (appointed to act as resident medical officer in view of his special experience of dysentery), and Captain A. C. Inman, R.A.M.C., who undertook a series of special investigations on agglutination tests by arrangement with the Medical Research Committee at the No. 1 Research Laboratory, St. Bartholomew's Hospital. Measures for prevention, treatment, and research were most thoroughly carried out by these expert officers, while the unsparing activity shown by Captain L. Cranmer-Byng in taking all the measures which were advised or were practicable to deal with the outbreak and trace its cause was of the greatest value.

Occurrence of cases.—Setting aside a few merely suspicious or slight cases, definite dysentery symptoms occurred in 38 cases at dates which may be grouped as follows:—

4 days,	Dec. 27th	to	Dec. 30th	12
4 „	„ 31st	„	Jan. 3rd	12
4 „	Jan. 4th	„	7th	7
Between	„ 8th	and „	16th	7

Clinical characters and treatment.—The cases, particularly those which occurred in the first eight days, were of considerable severity, two dying among those first attacked.

Clinically they were typical of bacillary dysentery. At the outset the civil medical practitioner in charge thought that the men were suffering from some form of food-poisoning, and it was not until some days later, when the outbreak had been reported to the A.D.M.S. of the district, that the diagnosis of dysentery was made on clinical grounds and specimens were forwarded for bacteriological examination to Captain Benjafield at the district laboratory. On Jan. 10th Captain Benjafield telegraphed that Shiga bacillus had been isolated from the fæces of two cases, and later this bacillus was recovered from seven other cases. In all instances the bacillus was typical *B. Shiga*, no other dysentery or dysentery-like organism or entamœba cysts being present.

The cases were treated in a special section of the institution, with separate latrines and washing arrangements. Nursing orderlies were provided. Milk, stimulants, and other special medical requirements were requisitioned and supplied. As stated above, a medical officer with special experience of dysentery was put in charge of the cases; for a brief period before his arrival another medical officer had been sent to assist the local practitioner who is in medical charge of the institution. Antidysentery serum was used where required.

All the 36 non-fatal cases had completely recovered by March and no relapses occurred. The cases were kept in the separate section of the institution until satisfactory bacteriological reports had been received. These related to three specimens of fæces taken during January, February, and March. By April the examinations made in Captain Benjafield's laboratory showed that all the 36 cases had given three consecutive negative results, including those in which *B. Shiga* was originally found.

Causation of the Outbreak by Water-infection.

Two circumstances attracted special attention—the sudden onset and short duration of the outbreak (24 cases within 8 days and 31 out of the total of 38 within a fortnight), and its widespread distribution among the men.

The institution is a two-storey brick building enclosing two main courtyards. It comprised 18 dormitories, 16 of which were occupied. Cases occurred in no fewer than 12 dormitories. There are several different mess-rooms and cases occurred in each mess. The 12 cases which occurred in the first four days were as scattered as the subsequent ones. There were three sets of latrines in different parts of the building, but the cases were not restricted to the users of any one of these latrines.

These facts made it certain that there was some one cause operating in regard to the whole institution about the end of December, the infecting agent persisting at most some two or three weeks. No source of infection was to be traced in the district. Shiga dysentery is unknown in this part of the country, and inquiry at farms where the men had been employed gave no indication of any local prevalence of suspicious diarrhœa or illness. It had to be assumed that infection had either been accidentally introduced from outside and had caused one or more unrecognised cases which had subsequently infected their fellows, or that a similar general infection had been started through some one or more of the men having suffered from dysentery before their arrival in England and remaining Shiga bacillus carriers.

These alternative hypotheses of the initial introduction of infection will be discussed later on, but in either case it was necessary to find a common distributing agent, such as food or drink, by which, given the initial infective agent or person, the outbreak itself was produced. Mere case-to-case infection contracted from latrines, or infection locally operating in particular dormitories or messes, were ruled out. There were no flies about at this time of year.

The various articles of food and their preparation and temporary storage were gone into in detail. The cooks, who cooked for the whole institution, were five men who had been there from the beginning, were perfectly healthy throughout, denied ever having had dysentery, and in all cases gave negative agglutination reaction. There were no

other men who handled all the food supplied to the different messes. Moreover, there was a control population, 80 in number, living separately from the institution, but receiving food from the same bulk supplies, all of whom escaped attack.

The facts, on the other hand, were consistent with a general infection of short duration through a temporary specific contamination of the water-supply.

Investigation of water-supply.—The liability of the well to contamination of excretal origin, and the special risk to which this water was exposed just before the outbreak began, is shown by the following considerations:—

1. Leaks were found in drains laid close to mouth of well, some leaks between 6 feet and 13 feet from the well being in a drain which served one of the principal latrines. The soil about these leaks was much blackened, and the possibility of this sewage reaching the water could not be excluded, although it is right to state that the drains themselves traversed a cap of clay which overlies the chalk and that the inside of the well did not show a point of leakage in any part of its wall near the surface.

2. On Dec. 14th the main pump of the well broke down, and it was necessary to use a small auxiliary pump at the bottom of the well just about the water level. As a result the man in charge of the water-supply had frequently to go down the well to see to the engine. This man has also the duties of supervising the sewage disposal plant, and so there was some opportunity of his contaminating the water with sewage-contaminated soil on his boots. This possibility, to which Lieutenant-Colonel D. Harvey first drew attention, was confirmed on detailed inquiry. It was also possible that dry refuse brought to the fire of the pumping-engine might have been swept into the well.

3. The water from the well is probably in underground communication with a disused well in the neighbouring courtyard (a capstan well which could be worked by hand). This capstan well was taken into use as a supplementary supply on one day only (Dec. 16th), following the breakdown referred to. It was clear from subsequent examination, however, that its water was subject to gross pollution from the drain of the laundry adjoining it and also from other badly-laid drains in the same courtyard. Thus, on the days immediately preceding Dec. 27th, when the outbreak began, there had been much disturbances of the water in this ordinarily disused well, sufficient, in all probability, to influence the quality of the underground water being drawn upon by the main well.

4. Analytically the water gave evidence of sewage contamination. On Jan. 8th coliform bacilli were found present in 0·1 c.cm. and absent in 0·01 c.cm. in the water of the main well; a previous examination on August 6th, 1917, had given the same result. After the uncovering and reconstruction of all the leaky drains referred to, another sample was taken on April 26th, 1918, with result of finding coliform bacilli greatly reduced, being present in 10 c.cm. but absent from 5 c.cm. Similar contamination and similar improvement as a result of the drainage work were established in the case of the capstan well.

Thus, looking at the matter generally, it is clear that, given a person at the institution who was excreting *B. Shiga*, there were several ways in which the general water-supply could have become specifically contaminated at the time in question, although the exact manner cannot be conclusively proved.

Duration of the infectious ability of the water.—It should be added that the water-supply was chlorinated towards the end of January, when the epidemic was shown to be probably due to water. The introduction of chlorination did not coincide with the cessation of the epidemic, which had ceased before this. It was, however, to be expected that if the specific infection of the water had been acquired only on a few days at the end of December and had not been renewed, its infecting property would naturally disappear in a comparatively short time. In this connexion some experiments were made by Captain Benjafield by purposely contaminating some of the well water in question from Shiga bacillus cultures and observing the time during which they could be recovered. The bacilli were present, though in greatly reduced numbers, on the tenth day after the contamination, when the observation ceased.

Source of the Initial Infection.

Details of the very thorough and careful search made for an original carrier case, or for evidence of an original introduction of infection from outside, need not here be given, as the results were negative. Only four of the men gave any history of past illnesses pointing to dysentery. In each case the attack had occurred more than a year previously. In none of them was there any history of relapses or any indication from the agglutination test that they had suffered from dysentery.

Incidentally to these inquiries it became necessary to test whether *B. Shiga* could survive for a few weeks on food which had been handled by a dysentery case or carrier.

Some experiments were made on this point by Captain Inman. The freshly cut surfaces of two pieces of bacon and four pieces of various kinds of sausage were lightly streaked with a camel-hair brush wetted with a saline suspension of *B. Shiga*, so diluted as to appear just turbid to the naked eye when held against a dark background. After this artificial infection the foodstuffs were left at ordinary temperature for three weeks. At the end of that time the Shiga bacillus was readily recovered from one portion of bacon and two of the sausages.

Agglutination Results.

Towards the end of January it was arranged that specimens of blood from all the convalescent cases of dysentery then being isolated at the institution should be sent to No. 1 Research Laboratory for examination.

Throughout these investigations the bloods were tested with standard agglutinable cultures of *B. dysenteriæ* Shiga prepared at the Department of Pathology, University of Oxford, on behalf of the Medical Research Committee. The technique employed was that outlined in the directions issued with the standard cultures. In each test the end-point of agglutination (standard agglutination) was arrived at by the use of the reduction table published by Dreyer and Inman.[1] The reaction was regarded as positive if the serum contained 10 or more agglutinin units per c.cm. of serum.

The results of these tests, which are shown in Table 1, are striking. A positive agglutination reaction was obtained in every one of the 35 cases in which blood could be examined, and the high dilution in which the reaction was obtained in nearly all cases is noteworthy.

Serum Agglutination Reactions (Capt. A. C. INMAN, R.A.M.C., *Medical Research Committee*).

TABLE 1.—*Actual Dysentery Cases.*

35 cases examined. Reaction in no cases negative.

No. of case.	Onset on—	Positive 1 in—	S.A. units.	No. of case.	Onset on—	Positive 1 in—	S.A. units.	No. of case.	Onset on—	Positive 1 in—	S.A. units.
1	Dec. 28	727	303	13	Jan. 1	727	303	25	Jan. 5	376	157
2	Dec. 29	500	208	14	,,	55	22	26	,,	187	78
3	,,	67	27	15	,,	220	91	27	Jan. 6	250	104
4	,,	440	183	16	Jan. 2	182	76	28	,,	220	91
5	Dec. 30	29	12	17	,,	182	76	29	Jan. 12	74	31
6	,,	250	104	18	,,	147	61	30	Jan. 14	440	183
7	,,	282	117	19	,,	194	80	31	Jan. 15	220	91
8	,,	250	104	20	Jan. 3	155	65	32	,,	155	65
9	,,	657	273	21	,,	250	104	33	Jan. 16	322	134
10	,,	302	125	22	Jan. 5	171	71	34	,,	125	52
11	Dec. 31	67	27	23	,,	128	53	35	,,	155	65
12	,,	388	161	24	,,	707	295				

S.A. units = Standard agglutinin units per c.cm. of serum.

In addition, blood specimens were taken from a considerable series of men who had not suffered from dysentery (all the dormitories and messes being represented), with the somewhat striking result that as many as 21 out of 114 of such men (18 per cent.) showed an agglutinating power of more than 10 standard units per c.cm. of serum (Table 2). In this 18 per cent. the titre was lower than that of the actual patients, but nevertheless was of an order which is obviously of significance and requires explanation.

TABLE 2.—*Men who Escaped Dysentery.*

114 men examined. I. Reaction negative: 93 men, including cooks (5). II. Reaction positive: 21 men (18 per cent).

No. of man.	Positive 1 in—	S.A. units.	No. of man.	Positive 1 in—	S.A. units.	No. of man.	Positive 1 in—	S.A. units.
C.1	69	28	C.8	38	16	C.15	35	14
C.2	58	24	C.9	125	52	C.16	70	29
C.3	31	13	C.10	38	16	C.17	36	15
C.4	50	20	C.11	38	16	C.18	125	52
C.5	36	15	C.12	25	10	C.19	35	14
C.6	69	28	C.13	84	35	C.20	50	20
C.7	60	25	C.14	80	33	C.21	84	35

TABLE 3.—*Men from Similar Institutions where No Dysentery Occurred.*

104 men examined. I. Reaction negative: 103 men. II. Reaction positive: 1 man (0·9 per cent.) in dilution 1 in 37. Standard agglutinin units per c.cm. of serum, 15.

In view of the possibility that the reaction of these 21 men might in some way have been determined by a previous inoculation, inquiries were made on the point both in their case and in the case of a similar number of controls showing no reaction.

[1] THE LANCET, March 10th, 1917.

The facts in each group, however, were practically identical. No special history could be obtained pointing to any of them having been inoculated with an antidysentery vaccine. All had received what appeared to have been an antityphoid inoculation early in 1917, the 21 cases in no way differing from the controls in this respect.

By way of further test, arrangements were made to supply Captain Inman with corresponding blood specimens from healthy men under comparable conditions in other institutions where no dysentery had occurred. 104 such blood specimens were taken, with result that in one case only was there any evidence of a high agglutination—namely, a single case showing 15 standard agglutination units per c.cm. of serum.

These results suggest the explanation that the 18 per cent. of the healthy men at the institution had acquired the ability to agglutinate *B. Shiga* as a result of exposure to the same infection which had produced dysentery in the 38 men who suffered from the outbreak—presumably the infected water-supply. But in the case of this 18 per cent., either because the local multiplication of the bacilli after infection was insufficient, or because of the existence of some factor of insusceptibility of the men, no symptoms of illness were produced.

Similar observations might usefully be made in other outbreaks of dysentery, or of enteric fever, where a generally operating cause like water or milk infection is suspected.

THE "INSTINCT-DISTORTION," OR "WAR NEUROSIS."

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IN a paper published some little time ago[1] it was pointed out that functional nervous disorders could be divided into two groups, according as to whether they were or were not determined by environment. Hysteria, and the neurosis about to be considered, belong to the former of these two groups, both being influenced by environment, while neurasthenia or the functional nerve disorder brought about by exposure of the nerve cells to prolonged poisoning by micro-organismal products, and certain of the reflex neuroses, belong to the latter.

The group of cases now to be considered resembles the hysterias in that environment plays a dominant part in their formation, but they differ from them in two respects: (1) in hysteria the rôle of environment is indirect, whereas in these cases it is direct; (2) hysterical phenomena are based on a physiological reaction, while the group under consideration is not so based; the phenomena are pathological and subserve no useful function in the shielding of the conscious mind from unpleasantness. For all practical purposes it is a product of modern warfare; it occurs in people correctly adapted for the requirements of civilised life when such people have been, for a length of time that varies with the individual, made to live in the utterly abnormal environment produced by the war. A functional breakdown of the kind to be described is liable to happen to everyone under these conditions, the variable element being the length of time that elapses before the symptoms become manifest.

The Primary Instincts.

Our normal behaviour under conditions of civilised life is to a great extent the result of the development, inhibition, and combinations of the primary instincts among each other. McDougall describes seven such instincts:

The instinct to run away	under the emotion of	fear.		
,, ,,	fight	,,	,,	anger,
,, ,,	of repulsion	,,	,,	disgust,
,, ,,	curiosity	,,	,,	wonder,
,, ,,	self-abasement	,,	,,	subjection,
,, ,,	self-assertion	,,	,,	elation,
and the parental instinct		,,	,,	tenderness.

These instincts should not be looked upon as hard-and-fast and rigidly defined from each other. Nor can we imagine that in an ideally primitive organism such instincts exist in a state of elemental purity; it is almost certain that they have evolved from a functionally undifferentiated nervous system, and that their development has been determined by environment. Generally speaking, the environment in which animal and vegetable life has developed through the ages has been the same for all forms—an environment of ceaseless stress and strain, of unending activity and competition; therefore all animal life met with on this planet manifests the presence of some or all of these instincts, their combinations and associations. But they are essentially labile, and their relative strengths depend on the minor differences in the conditions of life brought to bear upon any genus or species. But in that these instincts have developed from some undifferentiated form of nerve activity, the reactions manifested when for any cause the normal play of emotion and conation is disturbed need not be distinct and specific for each instinct involved. As a matter of fact, there is, I think, a tendency for certain of these instincts to show their "resentment" under such circumstances in a characteristic manner; but this is no more than a tendency, and need not necessarily obtain.

Now, if we consider the above seven primary instincts, we see that in that their relative strengths are the result of our customary environment, and are, in such strengths, useful for our customary environment, then, given a sudden and sufficiently radical alteration in our surroundings, the developed instincts in their relative powers may be utterly inefficient for the fresh environment. Modern civilisation tends to the safety of the individual without any very great trouble on his part, and the emotions of fear, anger, and repulsion are not, in such a state, called very frequently into action—at any rate, with any great intensity of tone. Much of the nerve force associated with these emotions is transferred to other conative activities, with results that are useful to the individual as long as he is living under the conditions of civilised life to which he is accustomed.

The Emotions in Warfare.

But under the conditions of modern warfare the emotions of fear and disgust particularly are called into frequent and violent activity. And not only is there a sudden and intense evocation of unaccustomed emotions, but the end-results and conative aspects of such emotions, so far from being given free play, are expressly forbidden, both by the idealistic conceptions acquired during childhood and early life and by vigorous punishment from fellow-men. Thus in modern warfare men are daily put into positions of imminent danger; the danger to life under certain conditions of military duty may be so great as to render death a practical certainty. In such situations men, if they are normally constituted, experience fear, and, under ideal conditions of such a position, would run away. As it is, self-respect and military discipline prevent this normal end-result, and such men proceed to fight in direct disobedience to their instinct. The helpful influence of the emotion of savage anger against their adversaries is not felt with any intensity. The disgust at the unaccustomed sights and sounds of conflict is not allowed to manifest itself in the normal way by repulsion, so that under these conditions three of the most powerful instinctive activities are distorted.

How utterly abnormal from the biological standpoint such a situation is may be inferred if we take analogous cases in the lower animal world and imagine a rabbit confronted by a hungry fox. If we further imagine the rabbit to be an idealist he might be tempted, for abstract reasons, to fight the fox, and the result would be obvious, and from the point of view of natural selection wise. Such a situation between two such animals is inconceivable, but if in place of abstract reasons the rabbit was fighting in defence of its young, then, whatever the result, the incident would be natural and the animal would probably fight more efficiently.

If we consider the above seven primary instincts we see that they are divisible into two groups, members of each reinforcing each other and antagonising those of the other group. Into one of these groups fall the emotions of fear, disgust, and self-abasement, with their associated impulses; into the other anger, self-assertion, wonder, and tenderness felt for offspring. A sense of inferiority combined with disgust reinforces the feeling of fear and renders the impulse to fly more powerful, whereas fear may be diminished by anger, a sense of superiority, and especially by the activity of the tender emotion. Unfortunately the tendency of modern warfare is to give play to the emotions of the first group without developing those of the second, and also to produce emotional tone without allowing the associated impulses to come into action. The elaborate inculcation of a hatred for the enemy and of a conviction that he is fighting in defence of his hearth and home are undoubtedly useful in lessening the destructive emotions of the first group in the case of the fighting man.

[1] THE LANCET, 1918, i., 365.

In that the occurrence of any emotion should normally be followed by the actual occurrence of its associated impulse, suppression of the appropriate conative aspect is directly harmful to the proper functioning of the nervous system, and is liable to be followed by functional disorders of this system.

In the case of the production of hysterical symptoms as opposed to those of the functional disorder we are now considering it was stated that the etiological value of the exploding shell and of the collapsing trench lay in the fact that they reinduced an emotional tone which had been at one time in the life of the patient associated with some particular incident that he had seen, or heard, or experienced. In the type of functional disorder that we are dealing with now the exploding shell and the falling trench also are important etiological factors, but they bring about their effects in a different way; they act as the "last straw on the camel's back," and simply complete the degree of fear that is necessary to make the symptoms obtrusive. In the former case these factors act as the triggers of a specially adjusted mechanism; in the latter as the final blows in the disrupting of the normal mental mechanism.

Symptomatology.

The symptomatology of the "war neurosis" differs from that of the hysterias in that it conforms to one type. In hysterical conditions of the pure or protective form there is found a cutting away from the consciousness of the patient all impulses coming from a region of the body which has been concerned in the transmission of unpleasant impressions; in the suggestion hysterias the diversity of symptoms and symptom groups is only limited by the limitations of the particular patient's powers of association, but in the war neurosis the diversity of symptoms is reduced; they conform to the various motor manifestations of fright, and are divisible into two groups.

In the first of these the fright manifestations are those associated with flight: pallor of the face with a rapidly beating heart and staring eyes, sometimes to the extent of exophthalmos; dilatation of the pupils and muscular excitability, spasm or tremor. Such symptoms in their essence are physiologically useful in that they put the animal into a state of preparedness for the obtaining of a desired objective—immediate removal from a given neighbourhood—and this is the group that is most often met with in this form of functional nerve disorder, some or all of them. When all are present the impression on an observer of utter fright is irresistible, but in actual practice all of them are not present in the majority of cases, and then the rôle of the suppressed emotion may escape attention.

In the second group the fright manifestations are those associated with the "crouching" instinct met with in certain of the lower animals, a process which keeps such animals perfectly stationary in situations of intense and imminent danger so as to avoid attracting the attention of an enemy. Here, in addition to the tachycardia, sweating, and dilatation of the pupils, there are inability to walk, or even to move the legs at all for this purpose; occasional attacks in which the patient for a short time cannot voluntarily move any part of his body; and inability to make a noise, aphonia, whispering speech, or its modification stammering.

The Element of Fear.

These somatic signs are indicative of a "choked up" conative aspect at, and leading up to, the time of their occurrence. Now, although it is true that normally the conative aspect of an instinct follows after the emotional, nevertheless it is a fact that the performance of appropriate actions tends to the production of the associated emotion. Thus, bracing the trunk muscles, clenching the hands, and setting the teeth will induce a feeling of anger; and it is to be expected that the presence of the symptoms mentioned above would reproduce the emotion of fear. This is always the case, and it is the presence of this emotion that is the deciding factor in the diagnosis of the war neurosis. These patients always at one time or another experience fear.

In the early, untreated, and acute cases the fear may be obvious and openly expressed; in addition to looking terrified, the patient is terrified, and he is terrified waking and asleep. As he improves the fear leaves him in his waking hours and is confined to his dreams, and the importance of a history of terror-dreams can hardly be overrated.

Much has been written lately on the subject of dreams and dream interpretation, and much of what has been written seems to me to be of the nature of a very elaborate structure built on very slight foundations. We do not know enough of the psychology of thought to justify detailed interpretation of dream incidents, but the emotion that is evoked by these incidents not only illuminates the general trend of the dream, but also gives important information as to what particular emotion has been excited and, if not actually suppressed, not been allowed free play during the waking hours.

The progress of a patient suffering from the war neurosis is best estimated by the intensity of the terror-dreams. In the earliest phase, when fear is felt during the waking hours, there may be a difficulty in getting to sleep at all on this account. Later, when he does sleep his rest is fragmentary, and is broken by the distress caused by his dreams. The fear-content of the dreams is so intense that it wakes him with a jerk, often with a cry; he lies for a time unable to move and sweating freely. He then drops off to sleep again, and the same behaviour is repeated throughout the night.

This phase gives way to one in which the patient on waking in the morning remembers with considerable distress the dreams that he has had, terrifying in themselves, but not sufficiently intense to wake him up. Or if he does wake up in this stage there is no free sweating.

In the third stage towards recovery the dreams do not come every night; several nights of refreshing sleep are obtained, and only now and again does he experience the dreams; in this stage he is not awakened at all by them. It is instructive, however, to notice that in this stage, if he is touched while asleep, he wakes with a start and in distress. If in the course of treatment the patient relapses the dreams revert to the early types, but not, in the majority of cases, with sufficient intensity to wake him.

As these patients improve the element of fear disappears from their waking life and in the course of time from their dreams. But in the vast majority of cases the somatic symptoms—tremor, stammering, and so forth—remain, and in such cases the final phase of the disorder has been entered, the stage of habit. The habit stage is of importance, for not only is it the stage of greatest duration, but it tends to perpetuate the condition by bringing about relapses. If while under treatment anything occurs to upset a patient's confidence in the methods of treatment he is receiving, if the conviction that he is going to recover is weakened from any cause, then his mind becomes, so to speak, sensitive to his symptoms, and in that these are the result of fear they work backwards and reproduce the emotion, as mentioned above; only the emotional intensity is rarely as intense as in the earliest phases of the condition.

These two stages of war neurosis, the emotional and the habitual, are characteristic, and their differentiation is important from the point of view of complete recovery. A patient in the first stage is ill and requires hospital treatment, whereas one in the second stage is merely inconvenienced, and very often hospital treatment is the direct opponent to complete recovery.

Another Type of Case.

In Mesopotamia and in India during the first half of 1916 quite another type, from the point of view of symptoms, of functional nervous derangement was met with. This form was characterised by evident mental dullness as far as events happening round the patient were concerned. Such patients would answer questions correctly but briefly; they took no interest in any subject under discussion and never volunteered any remarks; they were perfectly content to lie quietly and passively; they neither read nor wrote. When given any information bearing upon their interests they either took no notice at all or dismissed the subject with some indifferent remark. Their mental state was one of inertia; there were no positive signs, and to anyone who did not know anything of the antecedents of a particular patient he would seem just rather a surly and uninterested person. Yet in the course of their convalescence they proved themselves rather the reverse.

Such patients were those who had been in Mesopotamia some time, and who had experienced the distressing monotony that a prolonged residence in that country impresses upon most people. In the early days of the campaign everything there was characterised by this deadness—country, climate, occupation, and food. I cannot help thinking that the condition of intellectual inertia produced is the result of this utter absence of interest—is, in fact, the result of an

abeyance of the emotion of wonder in the instinct of curiosity. Patients in this condition recovered quickly when sent away from the country, recovery in many cases being associated with a period of irritability.

The Sex Instinct.

In view of the mass of literature, constructive and destructive, that has been published during recent years on the part played by the sex instinct in the production of functional nervous derangements, it may be advisable to discuss briefly its potency or otherwise as such a factor in the light of the evidence gained from the multitude of functional disorders that have been recently observed.

In that sexual activity is an instinct with emotional, receptive, and conative aspects, it may reasonably be supposed to be a possible source of an instinct-distortion neurosis, and in my opinion it is such a source in a limited number of cases. Its *modus operandi* is strictly analogous to that of the flight and repulsion instinct; that is, it produces a neurosis when there is an intense emotional activity with obstructed conative activity. In other words, it is not excessive sexuality nor perverted sexuality that produces the neurosis; it is compulsory abstinence from sexual activity. Given that a man with strong sexual tendencies be forced to live in an environment where he is unable to gratify them, however healthy they may be, then such a man may in the course of time manifest an instinct-distortion neurosis. I do not think that there is any need to postulate the existence of "repressed complexes" or other subtleties; a man in this position may masturbate or fall into homosexual practices, or, what is still more important, he may fear the possibility of such a happening. The end result is the same: he worries himself ceaselessly over his condition and ultimately develops mental depression. Such men frequently tend to struggle against this depression and to overcompensate in the direction of high spirits, and their neurosis takes this form—cheerfulness and high spirits with periods of intense depression—and such patients require careful watching, for they not infrequently resort to suicide.

Of course, in the case of men and women of an hysterical type the primary incident may be of a sexual nature, but this is not in any way essential, nor is it, in my opinion, at all frequent, at any rate in this country. The sex neurosis works through the medium of worry, and it is difficult, I think, for some of us to realise how intense this worry may be. Such cases may be suitably called "isolation" neuroses, for it seems probable that in addition to enforced sexual abstinence the factor of loneliness plays a part.

The sex instinct is most emphatically not of primary importance in the production of the war neurosis.

Causation.

It will thus be seen that the war neurosis as described above differs entirely in its mode of origin from hysteria. The latter condition clinically is the result of an improper suppression of a tendency that is inherent in every one of us and which is determined by our position in the scale of evolution; it is manifested as a result of an emotional activity which is normal as far as the emotion is concerned. The former is the result of an improper strain on the emotions themselves, leading to a wrongful emotional tone and to distortion of the bodily mechanism which is associated with the conative aspect proper to the emotion concerned. To use an analogy, there is all the difference between the two conditions that there is between the emptying of a reservoir by raising the sluices in the dam and by smashing the sluices or the dam itself.

The actual method by means of which emotional activity becomes manifest as somatic phenomena is an interesting problem that does not concern us here; the work of Cannon and others indicates the sympathetic nervous system and certain of the ductless glands as important connecting links. It is important, I think, to exclude from the pathology of "shell shock" (which is a term generically applied to certain hysterical and instinct-distortion phenomena, and which is about as applicable to either as "cold" or "chill" would be to all varieties of inflammation of the lungs) any lesion which gives rise to organic clinical signs. Cases in which after death hæmorrhages and compression lesions are found are better called "shell disease," after the principle that distinguishes caisson disease. The different functional disorders included at present under the name of shell shock should be sharply separated from those in which organic lesions can be diagnosed during life.

In this way, then, a shell exploding so close to a man that the violent alterations in the air-pressure bring about cerebro-spinal hæmorrhages and other disruptive effects would produce "shell disease," whereas the explosion that completes the measure of emotional stress in the manner described above, and which brings into eminence a condition that has long been incubating, produces "shell shock," so-called. In the presence of signs of organic disease shell shock should not be diagnosed, but shell disease. Of course, there are bound to be cases in which the diagnosis between the two conditions is of extreme difficulty, but from the point of view of both prognosis and treatment it is well to go on the principle of diagnosing shell shock only when a thorough examination reveals no signs of organic disease, and shell disease when such signs are present.

Diagnosis.

The diagnosis of the instinct-distortion, or war neurosis, is, as a rule, easy. In the absence of signs of organic disease it may be made in the case of any patient who shows symptoms of nerve irritability and in whom, at one time or another, the element of fear is present. In the event of such symptoms existing in a patient who shows no signs of fear, either in his waking hours or in his dreams, one of two conditions may be present—the war neurosis in the late or habit stage, in which there will be a history of terror-dreams at the beginning of the illness; or a suggestion-hysteria, in which case no such history is obtainable. Naturally, leading questions should not be asked; the patient should merely be asked if he sleeps well, or if he slept well at the time of onset of the breakdown.

It sometimes happens, though not in my experience very commonly, that an instinct-distortion neurosis and a pure hysteria exist in the same patient.[2]

I recently saw a young soldier, a private, who was under treatment for herpes zoster. The condition affected the left side of the chest, in the area of the fourth dorsal segment. While under treatment he quite casually mentioned that he had been recently suffering from what he called "attacks," after he had been in bed for a little time and when he was going off to sleep. In these attacks, which only lasted for a minute or so, he lost his sight, and all power of making a noise; he was absolutely unable to move a limb; he came to himself sweating, and, as he described it, "sick with fright."

The emotional tone of the incident, the inability to move or to make a sound were quite characteristic of the instinct-distortion neurosis, the symptoms conforming to those of the second group mentioned above, but the temporary blindness was difficult to account for on the grounds of an instinct-distortion neurosis.

Looking through some past notes of the case, however, the following entry was found: "The patient states that what worried him most when in Flanders were the horrible sights, to which, unlike most of his companions, he could never get accustomed." The amaurosis, in fact, was the result of a pure or protective hysteria, and the condition of the patient was due to the existence of the two types of functional nerve disorder.

The actual determining cause of the attacks was the sensation of his heart beating as he became drowsy; the trouble did not arise until he began trying to lie on the left, or herpetic side. The condition of the nervous system was quite slight and readily passed away; he had not been invalided for it; but in the event of his not having had herpes zoster when he did, it would be a matter of interest as to which functional derangement, the hysterical or the instinct neurosis, would have become obtrusive first. Probably the hysterical, in which case he would have been invalided for blindness.

The above case is of interest in that it indicates the lines along which an approach to the diagnosis should be made. Any particular symptom should be investigated from the standpoint of its being or not being, as the case may be, useful to the individual as a means of escape from his enemies, or of its being a derivative of such a useful manifestation. Thus, inability to move or to make a noise is obviously useful to the hare when trying to avoid attracting attention, but blindness is not, for it would militate against the final rush when the animal realised that attention had been attracted; it would prevent this realisation to a great extent. Therefore the blindness could not form part of the instinct-distortion neurosis, and further examination into the attitude of mind of the individual to his surroundings in the fighting line will ultimately bring into prominence some association with sight—either, as in the case just mentioned, distressing sights, or, if these are not complained about, some childish association in which the eyes played a part.

[2] As a general rule, in an hysterical individual the hysteria symptoms manifest themselves before the emotion neuroses have had time to develop; this is, of course, intelligible on the theory that the hysterical person develops his condition to protect his consciousness from emotional distress. The instinct-distortion neurosis may be coloured by a suggestion hysteria, but in such a case the greater includes the less, and the case should be looked upon as an instinct-distortion neurosis.

Treatment.

The treatment of the instinct-distortion neurosis is, in its essence, simpler that that of the hysterias, and more satisfactory. This, of course, follows from the fact that in the latter conditions symptoms are treated, while the underlying condition remains; the patient is hysterical to the end of his life. In the former, however, the harmony of the nervous system can be, and as a rule is, fairly easily restored, the difficulty experienced in practice being the persistence of certain symptoms as habits, and even these are more readily removed than would at first sight appear probable. In the course of time, when all ideas of the war as an imminent factor have disappeared, the more troublesome of these symptoms will be done away with owing to their very obtrusiveness, while the less troublesome will only persist as long as they do not interfere with the patient as a useful individual in the surroundings in which he works.

Treatment falls necessarily into two groups according as to whether the patient is or is not ill. These two groups correspond fairly accurately to the phases mentioned above, the active or terror phase of the illness and the habit phase.

There are two fundamentally important principles in treatment that should always be kept in mind. The first is that the patient must be removed as quickly as possible from the environment which was responsible for the condition—he ought to be taken right away from any focus of fighting; and the second is that from the very beginning he ought to have it impressed upon him that he is going to get completely cured. The removal from the combatant atmosphere is so obvious and so usual that its importance as a method of treatment as well as the light it throws on the origin of the condition is in danger of being overlooked.

When such a patient has arrived at the "ultimate base" wherein the remainder of his treatment is to be effected, if he is still in the active stage he should be kept for the most part in bed and in a ward that is quiet. It is inadvisable that he should be alone; I think that a ward with two other patients in it forms the best environment. Here he should stay until he is able to sleep without being waked up frequently by his dreams. In the early stages, when he is unable to sleep at all, I have found the best results with trional, 10 gr., with or without aspirin, and diminished gradually as the tendency to sleep improves. During this period it is well to make him realise that he has power over his legs by making him take a few steps every day in the ward, but as long as he is definitely "ill" with his condition he ought to spend most of his time in bed. He should be seen frequently by the medical officer in charge and should be constantly reassured as to his complete curability and encouraged to look upon himself as improving from day to day.

As the sleep improves and the dreams lessen in intensity he should be made to leave the ward for a short time each day and mix with the other patients, and then the more detailed treatment may be instituted. It will be found that patients manifest one, some, or all of the following disabilities: speech defects, tremors, disorders of gait, mental depression, irritability of the sympathetic nervous system

As regards *speech defects*, the principle of treatment may be summed up in the words, "careful and painstaking re-education." At the Seymour Park Military Hospital in Manchester we have been fortunate enough to obtain the assistance of the officials of the Institute for the Deaf and Dumb in the treatment of cases of disordered speech, and the results have convinced me that these patients are the most readily curable of all. Definite classes are formed, and the men are shown the position of the lips in the articulation of the vowels and their compounds. They are taught breathing exercises, are made to read aloud, and are discouraged from speaking to fellow-patients while they stammer. The result in the majority of cases is little short of marvellous, but, as in all cases of the instinct-distortion neurosis, treatment must be painstaking and to a large extent individual, and a very considerable degree of patience is required.

Similarly, in the treatment of *disorders of gait*. In the event of there being complete inability to move the legs at all, the patient should be made to sit on the edge of the bed and "feel the floor with his feet." Often enough this produces clonic spasms of the legs and the patient at first can only practise for short periods at a time, but if he is made to practise regularly and is systematically encouraged these spasms lessen, and he then begins to apply pressure to the floor with the feet. He should then be supported and made to stand, and to take a step or two; in the course of a very short time with support he will be able to get over the ground easily. The support should then be lessened, and it is well to remember that it is very much more easy to err by keeping the support, orderly, crutches, or stick, too long than not long enough. As soon as the patient can move fairly well when supported by an orderly he should be given crutches, and when he realises that he can manage these he should be made to give them up and take to a stick. The same principle is repeated with the stick; he should discard it as soon as he is able to use it with comfort. During the orderly, crutch, and stick stages he should be made to take exercises of precision over a track marked out on the floor. Two lines are painted on the floor about three feet apart, and foot-marks are indicated between them; the patient is told to walk between the lines, putting his feet on the marks. The proper use of the thigh and leg muscles should be insisted upon. These exercises may be associated with the use of a treadle machine.

Tremors also should be treated with exercises of precision. The coarse, clonic spasms of the early stages of the condition readily subside as improvement in walking is attained—and the less the patient's attention is drawn to the hands and arms in this stage the better. In the stage of the fine tremors he should be made to use his hands and arms in the way that best appeals to his interest; he should be made to construct models with a set of child's bricks or, in the later stages, with some of the "Meccano" outfits. Or he may be encouraged to manipulate chessmen or to do crochet work. The extent of useful exercises for tremors in the later stages is very nearly endless, and it requires only a little imagination on the part of the medical officer, sister, or nurse to suit a patient's requirements and, in addition, to make the exercises interesting. At the same time, these exercises should be carefully watched; any tendency on the patient's part to look upon them as a means of getting through the day apart from any therapeutic value must be checked; also, as soon as he has become proficient at one set of such exercises he should be given another and more delicate set. And when all signs of mental disturbance have disappeared and he realises that he can do useful work with his hands, then the sooner he is discharged from the hospital atmosphere into some form of civil employment the better.

An interesting symptom-group that occurs in certain of the patients suffering from this form of neurosis is *mental depression*, and often enough this only becomes obvious in the later stages of the disorder. Such depression may be due to the troublesome nature of the symptoms for which, primarily, a patient is undergoing treatment; in such a case it subsides as the symptoms improve and requires no special treatment. In other cases it is present in the absence of any obtrusive somatic symptoms, and then treatment should proceed along two lines—"therapeutic conversations" and employment. Therapeutic conversations should always be added to whatever form of treatment any patient with the instinct-distortion neurosis is receiving, but when there is well-marked mental depression they become of paramount importance. In such conversations, as far as possible, the "doctor and patient" atmosphere should be avoided, and in most cases in my experience psycho-analytic methods are not needed. The patient should be treated in a friendly manner, and in the course of time definitely asked what is troubling him. If sufficient tact has been used I find that there is usually very little difficulty in getting him to say what is on his mind; often enough, unfortunately, the cause of the depression is perfectly reasonable, and as far as medical treatment is concerned is not removable. And of all the causes domestic worries are the most potent. In other cases the depression is the result of disabling symptoms that are irremovable. In one case I saw profound depression was caused by gross nystagmus, apparently the result of hæmorrhages round the fourth ventricle and aqueduct; the case was one of shell disease. Depression caused by obtrusive symptoms is best treated by giving the patient occupation in experimental workshops; work which is not specially interfered with by his condition is chosen for him, and he is encouraged to make himself proficient in it. The more he is made to realise that he is not utterly disabled the more the depression lessens, but in some cases we have to admit that the depression is justified.

The *tachycardia* and other signs of irritability of the sympathetic nervous system are best treated by graduated exercises. It is an unfortunate fact that patients suffering in this way are extremely difficult subjects to convince that there is no organic disease of the heart; in the mind of the average patient palpitation, præcordial pain, and giddiness are incontrovertible signs of "heart disease." Such patients are best treated in hospitals specialised for heart conditions, in which the whole atmosphere of the patient is directed towards his realisation that his symptoms are in no way dangerous, and that by training they will cease to hinder his activities in after life.

Nomenclature.

In conclusion, it may be permissible perhaps to discuss the nomenclature of this condition, the instinct-distortion neurosis. The usual name, shell shock, is unfortunate, because it covers cases that are hysterical as well as those that are not, but which are the results of a strained emotional activity. But shell shock covers neither of these conditions completely; the most characteristic cases of the instinct-distortion neurosis may give no history of shell shock. On the other hand, what soldier patient that has been in the front line for any time has not been in the sphere of bursting shells? The name "shell disease" is applicable, for it is the direct disruptive effect of the explosion that produces the lesions of that condition, but shell shock, as a name applied to functional nervous breakdown in soldiers, cannot be justified.

Exposure to the sights and sounds of the modern battle-field may bring on hysteria manifestations or symptoms of the instinct-distortion neurosis. This latter name is clumsy, and "war neurosis" is too general a name to be applied to this disorder.[2] The more specific name "terror-neurosis" is perhaps a little invidious at the present time, and I would suggest calling the condition described in the foregoing pages "dysthymia" (δυς, impeded; θυμός, emotion).

We could then sum up the state of affairs as regards the factor of the exploding shell thus: The neuroses usually met with as results of the present war are hysteria and dysthymia. Neither is exclusively the result of the war, but of the two, dysthymia is the nearer approach to a specific war neurosis. In neither *need* there be a history of a bursting shell or a collapsing trench; such a history *may* be present in both. The bursting shell and the collapsing trench have no specific value in the determination of these neuroses; they possess an adjuvant value only, and this value may be obvious or masked. Only in "shell disease," where there are demonstrable organic lesions, have these factors any specific value, and the resulting condition is not functional.

[2] I have recently seen a most characteristic example of this neurosis in a woman, resulting from physical fear of being confined. The neurosis became evident shortly after marriage and became acute during pregnancy.

ON DISAPPOINTMENTS OF VACCINE THERAPY.

BY H. G. ADAMSON, M.D., F.R.C.P. LOND.,
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THE value of prophylactic vaccination has long been firmly established, but in regard to the efficacy of vaccination as a curative agent there is to-day considerable difference of opinion, and for many who have given this treatment a prolonged trial the results do not satisfy their earlier hopes and expectations.

Experience of Dermatologists.

As has often been the case with new remedies, dermatology was one of the earliest fields for the trial of curative vaccines; and there are two affections of the skin, of microbic origin and difficult to cure, in the successful treatment of which vaccine therapy at one time seemed likely to be of great assistance. These two affections are *chronic staphylococcic infections* and *lupus vulgaris*.

Experience extending over a dozen years has shown that this early promise has not been fulfilled. It is probably true to say that most dermatologists will hesitate at the present time before embarking a patient afflicted with sycosis or other chronic staphylococcal infection of the skin upon a course of vaccine treatment; he will, perhaps, as a last resort employ vaccines, but he will hesitate, since it is not possible to predict with any certainty that the patient will eventually be benefited, and his anticipation of a cure will generally be in inverse proportion to his experience of the treatment. Personally, always with an intense desire to see good results from vaccine treatment in these obstinate cases of chronic staphylococcal infection, I have been so unfortunate as to have but rarely met with them either in very numerous cases treated by myself or in my own cases treated by expert bacteriologists.

Striking cures are, indeed, reported, and it must be admitted that good results are occasionally observed with vaccine treatment in the less chronic forms of staphylococcal infection of the skin, in recent furunculosis, and in pustular acne which is not of long standing; but such results are by no means constant, and in the majority of cases there will be but temporary improvement, if really any improvement that cannot be attributed to other treatment carried out at the same time or to accidental coincidence with the natural course of events. In some cases the eruption will become worse.

And, again, it is certainly correct to say that most dermatologists will not now recommend tuberculin treatment as a likely cure for lupus vulgaris, and that many will avoid it as being fraught with danger. In my own experiences, in every case of lupus treated by tuberculin the disease has subsequently become less controllable than before the treatment was used.

Experience in Other Fields of Medicine.

If we compare the experience of dermatologists with that of others in other fields, we find much the same opinions to prevail. From a perusal of the reports of the discussions on vaccine therapy which took place at meetings of the Royal Society of Medicine in 1910 and in 1914 we gather that although this treatment may now and then appear to give dramatically successful results, it more often fails, and sometimes does harm.

Sir Thomas Horder summed up the opinion of many when he said that "the failures of vaccine treatment are more frequent than its successes."

In respect of the value of vaccine treatment in enteric fever, in gonorrhœa, and in ulcerative endocarditis, there are differences of opinion, and many observers have expressed themselves as dissatisfied with the results in these affections.

In connexion with the treatment of septic wounds of war curative vaccine therapy has proved of comparatively little value, and Colonel Sir Almroth Wright seems to admit that it takes but a secondary place compared with preventive vaccination, for he remarks to-day in regard to the treatment of wounds that—

"Prophylactic employment of vaccines is not only from the theoretical point of view the best of all methods of employing vaccines, but it is also the method which gives in practice the maximum advantage."

And again he writes—

"Treatment by physiological methods ..... procedures such as the opening and draining of the wound ..... is beyond all comparison the most important, and I would admit that—all loud talk notwithstanding—antiseptic treatment is at the best an ancillary method of treatment. And of course," he adds, "the same applies also to treatment by vaccines."

These statements appear to indicate a distinct recession from the opinion, which he expressed in 1909, that—

"The principle of building up the resisting power of the system against any microbe which may have entered the body will ultimately hold its own even against the principle of warding off infection from the susceptible patient."

To-day prophylactic vaccination "is the best of all methods of employing vaccines," and "treatment by vaccines" "at the best an ancillary method," "all loud talk notwithstanding."

Consideration of Comparative Failure of Curative Vaccination.

How are we to account for this comparative failure of curative vaccination as contrasted with the striking success of prophylactic vaccination? Is it not that in prophylactic vaccination we are dealing with a less intricate problem and a proceeding which is better supported by known facts than that which confronts us when we attempt to cure an already existing infection by means of vaccines?

It is easy to see that *preventive* vaccination has a sound foundation. The study of immunity reactions has established the general principle that when an animal becomes infected by a micro-organism it is rendered, after a period of incubation, specifically supersensitised to the toxins of that micro-organism—to use the expression of Von Pirquet, a condition

of allergy or altered reactivity is produced. As a result of this allergic condition the animal is protected against a second infection. An attempt to produce a second infection gives rise to a reaction more violent than the reaction to the first infection, which has a shorter incubation period and which ends in spontaneous cure. The efficacy of prophylactic vaccination is demonstrated in the results of preventive vaccination against small-pox and against enteric fever.

But when we come to the cure of an already present infection we have altogether different conditions. The protection which has been acquired against a second infection varies in degree and in the length of time it endures in different diseases. In certain infections the reaction is such that the infected organism completely overcomes the invasion and remains henceforth protected against the disease. This occurs in small-pox and in scarlet fever, among other complaints.

In a second class the patient, although protected against a second invasion from without, yet remains infected and is liable to new infections from within—that is, to auto-inoculations. This occurs in tuberculosis and in syphilis.

In a third class the protection is apparently of but short duration and seems often to be followed by a period of increased susceptibility, so that new infections may easily take place. This is seen in streptococcal and in staphylococcal infections and in influenza, for example.

What we require to know in regard to the second and third of these classes is whether in a subject whose immunity development has been insufficient completely to overcome the infection we can by appropriate doses of vaccines so enhance the production of immune bodies—i.e., so "build up" the resisting power of the system against a microbe which has entered the body—that the defeat of the invasion is assisted or completed; and whether we can do this without danger of discrganising the mechanism of immunity and possibly lowering instead of raising the powers of resistance.

Production of Protective Bodies.

The early promise of Wright's method of curative vaccination was that we could avoid the danger of over-stimulation and its risks of fresh infection, such as we became familiar with in the early days of treatment by Koch's old tuberculin, by regulation of the dosage, and that we were able to enhance the production of protective bodies without so disturbing the mechanism of immunity as to do harm.

This method was based upon the hypothesis—

"That the blood of those who become the subject of a bacterial invasion is deficient in protective substances," and "that by an injection of corresponding bacterial vaccines the content of the blood in protective substances can in practically all cases be increased."

These protective substances were "hypothetical substances in the serum which incite phagocytosis by action on bacteria"—i.e., opsonins. It was further maintained that the measure of the production of protective substances could be gauged by the observation of the opsonic index and the appropriate doses of vaccine measured accordingly.

This hypothesis is exceedingly simple, and if it expressed the whole problem of immunity vaccine treatment would be a straightforward proceeding. But in reality it is simple because it ignores a good many facts and current ideas in regard to immunity production.

It ignores the teaching that an infected organism develops specific immune bodies as a consequence of becoming infected, for according to Wright a patient suffering from an infection, such as lupus vulgaris, has a lower "opsonic index" than a normal uninfected person—that is to say, he has less protective substances in his blood. But according to the more generally accepted view a patient with lupus vulgaris is protected against fresh infection because he has acquired protective bodies which are absent in the normal person. Although the average "opsonic index" of lupus cases has been found to be 25 per cent. below normal, yet every case of lupus gives a "cuti-reaction" to tuberculin, and thus indicates a body content of protective substances above the normal.

Again, in cases of enteric fever agglutinins are present in the blood which are absent or deficient in the normal. Yet the hypothesis of Wright supposes the blood of the enteric patient to be deficient in protective substances.

But although the hypothesis of Wright seems totally to ignore the teaching that an infected person develops protective bodies as a result of infection, it yet supposes that these bodies can be developed as a result of vaccination, an attitude which seems contradictory.

It is doubtless perfectly true that the immunity reactions may be stimulated by vaccination, but we must not lose sight of the fact that a person who has been infected is in a state of allergy or altered reactivity or hypersensitiveness towards the toxins of micro-organisms by which he is infected, so that the reaction which may result from even a minute dose of vaccine may be enormous in proportion to that which would occur from the same dose in an uninfected person, and that such an excessive reaction may be followed by a period of exhaustion of immunity or "anergy." And this seems to be the danger of the proceeding of so-called curative vaccination, that we cannot estimate the result of a vaccine in an already infected subject. The minutest dose of vaccine may set up in an infected subject an explosive reaction whose force we are quite unable to predict or control.

The Opsonic Index.

According to Sir Almroth Wright's hypothesis the proper dose of a vaccine may be estimated by the opsonic index. But this hypothesis ignores the fact that in many infections the polynuclear leucocytes or phagocytes take little, if any, part in the defence against the invading micro-organism. In tuberculosis, for example, the cellular defence is a connective-tissue-cell defence and one in which the polynuclear leucocytes appear to take no part. And when we examine the results of depending upon the opsonic index as a measure of the production of protective bodies by vaccination we find that this has proved altogether unreliable. For in 1904 1/500–1/20 mg. of new tuberculin was regarded as an "extraordinarily small dose." In 1906 Sir Almroth Wright said:—

"I now begin with a quantum of tuberculin corresponding to not more than 1/1000 milligram of T.B. powder and never advance to doses larger than 1/600 mg."

In 1910 the doses recommended were 1/20,000 mg. to 1/4000 mg. These doses were from the beginning controlled by observation of the opsonic index, and the earlier cases were reported as doing well with doses which were a very great deal larger than the doses which were afterwards advised to be used.

If we turn now to staphylococcal infections in the defence against which the polynuclear leucocytes do take an important part, and in which the opsonic index might more reasonably have been supposed to be of assistance, we find the same difference between the earlier and the later dosage. In 1903 the opsonic index told us the proper dose was from 2500–5000 million staphylococci and that the index could be controlled and cases cured by these doses; but in 1908 the dose was reduced to 100–250 millions. So that we must begin to doubt the value of this control even in cases of staphylococcal infection, and to ask, "Have we any reliable means of knowing the proper dose of a vaccine?"

Further Criticism.

Viewed again from another aspect, the rationale of vaccine treatment for chronic staphylococcal infection seems to be at fault. In staphylococcal infections of the skin the protection against a new infection varies with the severity of the primary infection. In the case of a carbuncle the patient is protected against a new infection and the lesion generally remains single. In the case of a boil the protection is frequently of short duration, for it often happens that a second or more boils appear before the first has disappeared; and cases are common in which there are repeated crops of boils over months or years, or a continuous infection of fresh hair follicles, as in *sycosis menti*. In these cases, in spite of the repeated stimulation of fresh infections, although there are intervals of improvement, yet the immunity reactions do not produce a cure; and it is difficult to say why we should expect a vaccine to accomplish that which the repeated reinfections fail to do. In practice we find this to be the case, and, at any rate in my own experience, we but rarely, if ever, succeed in curing a case of chronic staphylococcal infection by vaccines, and we are in danger of ultimately making the case worse by over-stimulation.

It has already been said that in practice the treatment of lupus by vaccines is proved to be highly dangerous. In the treatment of staphylococcal infections the danger of doing harm is perhaps less serious, but vaccine treatment of chronic staphylococcal infections of the skin is so uncertain in its results that it seems to have fallen into disuse in dermatological practice almost equally with tuberculin treatment.

As Sir Almroth Wright has put it—

"The body has the machinery for immunisation, and you can play tunes upon it if you know the laws. If you do not happen to know the laws when playing upon it, it may be quite injurious."

The uncertainty of the results, for most part the disappointing results, of vaccine treatment should perhaps make us pause and ask: Are we at present in a position to play tunes upon the machinery of immunisation by means of vaccines after the machinery has already been set in motion as the result of microbic infection?

It may be that vaccine treatment sometimes gives dramatically successful results, and we are perhaps justified in giving this treatment a trial in certain cases of infection where other treatments have failed. But the still prevalent tendency to employ vaccines indiscriminately in all sorts of complaints should be deprecated, because we are not really in a position to know when we may do good and when we may do harm by this treatment, since we have no means of estimating its effects in a person whose reactivity has been altered, perhaps profoundly altered, as the result of previous microbic infection.

The almost equally prevalent use of vaccines in diseases of non-microbic origin is perhaps of less consequence, but it is apt to delay the employment of a treatment more suited to the case and more efficient.

Reviews and Notices of Books.

The Life of Sophia Jex-Blake. By MARGARET TODD, M.D. (Graham Travers). London: Macmillan and Co., Ltd. 1918. Pp. 574. Price 18*s*.

Sophia Jex-Blake was born to be a pioneer. Whether she was born to be a doctor is, of course, another question. Her adoption of medicine as the profession in which she could carry on her struggle for the rights of women and for her own freedom seems to have been something of an accident; but she was born to struggle and to struggle through. From childhood to old age she overflowed with energy, an energy that sometimes spent itself in storms, or what she called "cataracts," and which undoubtedly caused unhappiness as well as happiness. Perhaps the unhappiness was chiefly for herself; if her intense and vehement affections did not always make her understand the people she loved, still less did they make her intelligible to them. She suffered accordingly, as those who give everything except calm, and accomplish everything except self-control, are bound to do. The tragedy began in childhood, when she was sent from one school to another, and a series of excellent, religious, affectionate, but (one fears) stupid, schoolmistresses found her unmanageable, while her effect on her delicate mother's nerves was such that for long periods it was not considered possible for her to be kept at home. The tragedy went on in youth, when she put her whole heart into a friendship with Octavia Hill, a person of such opposite temperament that the misery which followed was perhaps inevitable. It probably went on to some extent all her life, though the wider field in which she moved, the greater choice of companions, and the freedom she had won made its effects less visible. But the energy did not end in storms. The mother who had so often been laid on a bed of sickness by Sophia's childish naughtiness, became her dearest life-long friend. The loss of Octavia's friendship, though, we are told, it "cut Sophia's life in two," did not break her down. For many years she suffered intensely, but "till the close of her life the friendship on her side remained unbroken," and from it she drew fresh energy and idealism. She was always, we learn, "one of the most affectionate people that ever lived," and though it seems likely that she was also always difficult to get on with, she did a great deal to make the effort worth while.

Her career was as stormy and as fruitful as her personal relations. It began when at 18 she forced her somewhat disconcerted father to let her go to the newly-opened Queen's College, London, and to accept a post as mathematical tutor, for which he was horrified to find that she was to receive a salary. Teaching was, indeed, her chosen profession, but in America (which she visited seven years later) she fell in with Dr. Lucy Sewall, then resident physician to the New England Hospital for Women and Children, and was inspired with the wish to study medicine. She watched Dr. Sewall at work and learned a good deal from her, and when the death of her father forced her to return to England, she determined to seek for a medical education in a British university.

The story of the great struggle which resulted in the opening of the Edinburgh School of Medicine to women is told in detail in Dr. Margaret Todd's fascinating pages. Sophia Jex-Blake was the protagonist. Indeed, she began the struggle alone, but when the Medical Faculty and the Senate had sanctioned her admission to lectures the University Court rejected her claim on the grounds that special arrangements could not be made for "one lady." As soon as this was made public other women announced their intention of standing by her side, and the famous battle of the *Septem contra Edinam* began. It lasted from 1869 to 1873 and aroused such storms of passion as is difficult to imagine now. THE LANCET did not at first support the women, but in 1871 it "took fire," says Dr. Todd, quoting the following editorial passage: "Common candour must compel any unprejudiced person to admit that the fight has been pursued by the orthodox party *per fas et nefas* and that the ill-advised conduct of grave and learned seniors in the profession has offered only too plausible excuses to the heated blood of younger partisans to indulge in coarse excess." From this time on THE LANCET continued to urge the claims of honour and fairness on the party which claimed orthodoxy for its part, but which preferred every other method, from libel actions to organised riots and assaults. This brutality was met by the indomitable spirit of the girl students, and by the unstinted devotion of the male supporters of enlightenment, ranging from the majority of the Medical Faculty itself, and from such distinguished names as those of Professor Masson, Professor Lorimer, and Professor Calderwood, to the Irish students, who formed a defensive brigade to escort the girls to lectures, and no doubt greatly enjoyed the consequent opportunities for a free fight. In the midst of it all, Miss Jex-Blake disconcerted everybody by failing in her first professional examination. It was, of course, because she had been giving her whole energies to struggle instead of to study, and had thought a great deal more about her cause and those she was leading than about her personal success; it was very characteristic. She did ultimately become a successful doctor, but it is doubtful whether science was ever the first thing to her. The woman's movement and the help she could give to individuals seem to have come first in her thoughts till the end of her life. She was first and foremost a fine human being.

All her humanity and all her struggles are well set forth in Dr. Margaret Todd's admirable biography, which gives us a vivid picture of a varied and strongly-coloured life. It is to be recommended to all who are interested in the history of medical women, and to all who care for psychological drama and the struggle of character with environment. It is not only full of information, but is as absorbing as a good novel.

I. B. O'M.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

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THE LANCET.

LONDON: SATURDAY, AUGUST 10, 1918.

The Medical Conditions of Industrial Manufacture.

A REPORT which has just been issued by Mr. H. M. ROBINSON, the Chief Inspector of Factories, on the work of his Department during 1917, bears evidence of the present paper scarcity. But while it lacks in bulk, and while no effort can be made to present the masses of valuable data and information to which we have been accustomed in these annual reports, nevertheless it still retains all its human interest. The documents are of the highest value in reminding us of the extent to which British industries are being carried on to-day as apart from that branch of industry which is devoted to the production of munitions of war; and this is specially valuable when there is a tendency to forget that any other industry is at present being pursued. This country is at war, and is devoting its first energies to carrying that war to a successful conclusion, but it is the very essence of our strength that simultaneously we should be able to preserve a continuity in our social and commercial life. We have endeavoured in another article this week to inculcate the same lesson, as it is brought to our notice by the impending exhibition of modern British scientific products. Mr. ROBINSON'S report marks the close of Sir ARTHUR WHITELEGGE'S long term of office as Chief Inspector of Factories. It is now more than 21 years since he was appointed, and not as a medical man but as an administrator of known capacity, in order to reorganise the Factory Department. During his period of office that Department has been entirely transformed; not merely has it increased out of all recognition in size, but its work has become more and more skilled and technical. The standard of inspection has been raised, technical experts have been added to the staff; medical inspectors, electrical inspectors, technical engineers and chemists have been appointed; and, what was regarded at the time as a startling innovation, lady inspectors of factories have been created. All these things have been done during Sir ARTHUR WHITELEGGE'S term of office, and those who have been privileged to work under him must always recall him as a great Chief Inspector.

The present report varies from peace time reports in that it presents only four subjects dealt with in detail, each written by a specialist. The record given by Mr. G. BELLHOUSE of the present position in relation to hours of work and emergency orders is one of great interest, establishing as it does the way in which hours of labour have varied during the stress of war production. He shows how the efforts made in the early days of the war have been ascertained by industry itself to be not merely injurious to the workers, but inimical to output, so that recognition, without undue legal pressure, is being given to the necessity for not merely shortening hours, but for working hours which are humanly convenient. The tendency to give up working before breakfast is marked, and it is accompanied by better time-keeping and less sickness. There can be little doubt that industry will settle down to shorter and more reasonable hours without being driven thereto by legal enactments. Miss A. M. ANDERSON'S article on the extent and effect of the substitution of women and girls in industry is of immediate importance, not merely as indicating what has been done in diluting male labour and so showing what work women can do, but as indicating what, when necessity drives, can be done to make industrial processes lighter and easier. Those who know Miss ANDERSON'S fight for the working woman in the past will find her now almost advocating the employment of women on branches of work which a few years ago she would have looked upon as entirely outside their capacity and, indeed, as work which they ought not to be allowed to attempt. To-day women in shipyards are sweeping, cleaning and doing general labour, painting, french polishing, sand-papering in joiners' shops, core-making, assisting riveters, plumbers, and electricians. They are wiring on the boats, scraping tanks and sides of ships, welding, repairing, and doing actual crane-work, and, Miss ANDERSON adds, "if one looks at the women one usually finds brighter, healthier faces in those engaged in the more exposed processes than in the parts of the works which approach more nearly to ordinary factory conditions." Mr. W. SIDNEY SMITH'S article on Doping in Aircraft Works is the story of a wonderful victory for ventilation. A few years ago it would have been thought an impossibility to change the air of an ordinary workplace 30 times an hour without causing discomfort to the workers from draughts, but Mr. SMITH and his colleagues have shown how this can be done, not merely without causing draughts, but while maintaining the necessary warmth (about 70° F.) required for the process. He points out the difficulties which he had to overcome from so-called ventilating engineers, who were so wedded to the principles of plenum ventilation that they attempted to introduce pressure fans into dope-rooms. What has been done for the ventilation in aircraft works must mark a great step forward for the more adequate ventilation of workshops as a whole.

The article upon Trinitrotoluene Poisoning, by Dr. T. M. LEGGE, which concludes the series, is an entrancing medical chapter dealing with a serious outbreak of poisoning associated with a high rate of mortality. Under the stress of war work the problem was tackled by a combination of research work and medical supervision in the factories directed from headquarters, combined with strenuous support from engineers in improving the processes and diminishing the contact with the poison. As a result, even though the numbers employed continue to increase, the poisoning has diminished until it has practically reached vanishing point. The introduction of whole-time medical

officers in the factories concerned has demonstrated the value of such medical advice on factory premises, and a great extension of this service is in contemplation in the future. In fact, Mr. ROBINSON, in his sketch of the activities of his Department, points out that in the recent large developments of industry sight is apt to be lost of the fact that the whole is a natural outcome of the activities of the Factory Department. The movement known under the term "welfare" was largely set on foot by those members of the Department who formed part of the Health of Munition Workers' Committee; and the Home Office was able to obtain legal powers for enforcing welfare accommodation which are being fruitfully used not merely for the munitions industry, but in other trades as well.

The Weapons of Science.

THE record of British scientific discovery along many lines is admitted to be without parallel—along so many, indeed, that our total contribution to developing civilisation is as yet larger than that of any nation, though the pace, which we set originally, has often been too fast for us. Equally admitted is it that the significance of the results of patient research in this country has not, in various important directions, been foreseen. In scientific initiative we have usually held the first place, but in the practical applications of our findings to the common affairs of life we have shown little aptitude, being content to allow these findings to remain as mere academic exploits whose issues could be faithfully worked out by others. What a policy! And the policy cannot be justified by any noble altruism. We have refrained from the meal which we prepared not through generosity, but because we have been too lazy, as a people, or too ill-educated in scientific affairs. It has been left for a cataclysmic war to bring this reproach home to us, and none too soon we are benefiting by our terrible lessons. It is gratifying to know that an earnest movement is now on foot to ensure that the fruits of national genius may be employed in favour of our national interests. This movement takes shape in the exhibition to be held at King's College, London, from August 12th to Sept. 7th under the ægis of the British Science Guild, when the products and appliances of scientific and industrial importance, which before the war were almost exclusively obtained from enemy countries, though the pioneer work had been accomplished by ourselves, will be displayed for public appreciation.

That our scientific workers possess something more than academic initiative, and can materialise their academic labours for the direct benefit of the community, will find remarkable illustration in the exhibits collected, but our gratification on learning this will be chastened by the remembrance of the vast opportunities which we have let slip owing to our national inability to regard scientific discovery as a weapon in practical life and not as an occurrence in a laboratory, interesting only to those immediately employed in research. The results so far achieved prove that adroit adaptation of the results of scientific research to industrial enterprise can be as boldly characteristic of the British scientist, as is his instinctive ability to wrest from nature her secrets. But until now he has awaited a stimulus, and never before was there a more striking illustration of the traditional maxim that necessity is the mother of invention. Necessity has now constrained soaring genius to answer questions of utility, with the result that our people at large can comprehend their vast debt to research, while the seekers after truth are put in good heart by a public appreciation which hitherto has never been theirs. We believe that we shall write in future not of the public neglect of science, as, regretfully, we have written in the past. On the contrary, we look forward to telling more often the story of vigorous progress by scientific means to practical ends, and to describing the opening up of vast fields of active industry, destined to secure a prominent place for this country in commercial prosperity, while contributing at the same time to world progress. Recent developments have shown that, given political and financial support, the future of scientifically directed industries is certain. How else can we interpret the successful manufactures which will be on demonstration at the forthcoming exhibition? There will be seen dyes, special glass, optical appliances, surgical, bacteriological, and pathological apparatus, certain metals—not necessarily rare but all very important—and drugs which have hitherto been entirely supplied to this country from Germany or from those associated with the German cause. To take a striking example, we have been content hitherto to rely upon Germany for our supplies of potash, when all the time we had abundant native material at our door, rich in the valuable element and only waiting for an economic process of extraction. It is now announced that from felspar, among other minerals, there can be extracted potash more than enough for our needs. In times of peace no tenets of economy or self-reliance sufficed to bring that fact home to us; but the shortage of war has braced our scientific men, and promptly there has been evolved a process for its economic extraction.

Many of the pressing economic and military problems in front of us mean, in short, the carrying into practice of principles which have been established in our laboratories. It is no exaggeration to say that next to our commanders on land and sea, the men of the moment are the chemist, the physiologist, and the engineer, in their various separate and blended capacities. Men of such qualifications should be sought out untiringly and recruited under generous conditions. The same demand comes from our great colonies—as, for example, Canada—which, as is pointed out by our Canada correspondent in another column in this issue, is enormously rich in undeveloped resources. The chemical engineer is badly wanted who can estimate whether the indications given by the test-tube can be materialised in the capacious tank or still of the works. The man familiar with the operations of the laboratory bench, as well as with general chemical principles, will recognise what an opera-

tion on massive scale demands; such a man is of prime value to this country to-day, and it is well that our politicians should have begun to perceive this truth. For much work lies ahead that ought to be done now, while the raw native materials at the disposal of the enemy give him many advantages, presenting to him a simpler problem in regard to the extraction and preparation of ultimate products. Commercial men familiar with questions of this kind, it is to be devoutly hoped, will give science that hearing which the present position claims and which hitherto has been refused. Such are the reasons why the forthcoming exhibition is of the greatest national importance, and we are glad to learn that a gratifying demonstration of what British science is able to do in regard to industrial developments is promised. Our statesmen have consistently disregarded the warnings of science in the past; they must do so no longer.

Annotations.

"Ne quid nimis."

BACTERIOLOGY OF THE "SPANISH INFLUENZA."[1]

THE pandemic of influenza has not spared any single part of Germany. The clinical course does not seem to differ from that run by the disease in this country. Relapses and fatal pneumonias are particularly noted. The clinical picture is declared to be identical with that of the last pandemic of 1889. A very striking observation has been brought forward and generally confirmed at a special meeting of the Munich Medical Union on July 9th—namely, that persons under 30 years of age mainly fall victims to the disease; this was explained by a survival immunity in the elder generation. The meeting considered all the aspects of the epidemic on the basis of the hospital and University material of Munich. Pfeiffer's bacillus has been found but exceptionally; streptococci, and occasionally pneumococci, were recovered from the sputum, organs, and also blood of the patients. Similar findings were recorded in 1889, and thus the present results were in "keeping with precedent." Pfeiffer's bacillus had not been found until 1892, although it should have been impossible to overlook it in 1889, thus it may be that it will yet turn up in due course. The editors of the *Deutsche medizinische Wochenschrift* have addressed a circular inquiry to all the leading bacteriologists in Germany requesting enlightenment as to the results of their laboratory investigations. Pfeiffer himself had reserved his final opinion as to the relationship of the pandemic with those of 1889 and 1891–92. He had not examined a sufficient number of cases at Breslau, but found his bacillus in some while failing to recover it from others, and was still investigating the causes of this discrepancy. Gruber answered from Munich very simply: "Influenza bacilli not found hitherto—investigations proceeding." Ulrich Friedemann, who is in charge of the infections wards of the Virchow Hospital of Berlin, expressed his belief that the symptomatology and complications of the epidemic correspond exactly with those described in 1889–90. He had not found the Pfeiffer's bacillus, streptococci and pneumococci being the most common agents of the complicating pneumonias. The influenza bacillus may be evading capture on account of faulty method of inquiry, yet on the other hand the possibility must not be overlooked that there may be epidemic diseases clinically resembling influenza of which the Pfeiffer's bacillus is not the agent. Uhlenhuth has so far reported from Strassburg the same contradictory results as those of Pfeiffer. Kolle reported under the date of July 18th from Frankfort his failure to detect Pfeiffer's bacilli in any of the few cases which he had thoroughly examined. In practically all cases there were found, however, large numbers of a Gram-positive coccus—often in a pure culture or in symbiosis with pneumococci. The diplococcus tended to develop involution forms and to grow in very long chains in the condensation water. He regards them as agents of a secondary infection in the "Spanish disease" which to his mind may not be identical with the pandemic influenza of 1889–1893. The finding of this pleomorph Gram-positive diplococcus is very interesting in view of the observations of Rosenow and his pupils in the United States.

[1] Der bakteriologische Charakter der "Spanischen Krankheit." Deutsche med. Wchnschr., Berl. u. Leipz., 1918, xliv., 775 and 808. Editorial Notes, München. med. Wchnschr., 1918, lxv., 804.

A YEAR'S WORK AT A MENTAL SECTION.

Dr. R. Eager, Major, R.A.M.C., the officer in charge of the mental division of the Lord Derby War Hospital at Warrington and formerly senior assistant medical officer of the Devon County Asylum, has submitted to us a valuable analysis, appearing in full in the current number of the *Journal of Mental Science*, of the admissions and discharges in the division from June 17th, 1916, to June 16th, 1917, amounting to some 2429 of the former and 1466 of the latter. The main facts of the analysis may be summarised thus:—

The average number of admissions per month was 202 and discharges 122. It may be stated that these figures refer both to men who have served with one or other of the Expeditionary Forces and to cases occurring with the home troops, although the latter are now dealt with in other ways. The general method adopted was to admit the patient for the purpose of examination, observation, and diagnosis, and if his case was considered mental and he did not make definite improvement he was certified and sent to the county asylum to which he was chargeable. If, on the other hand, he showed signs of improvement he was retained in hospital till he was able to be discharged to the care of his friends. To take the admissions from among the home troops first. These amounted in the year selected to 258. Of these, 168 were eventually discharged to their civil occupation, 66 were certified and sent to asylums, 6 died, and 8 were sent back to home duty with the army. The main clinical groupings in the 258 were: mental deficiency, 53; delusional insanity, 43; melancholia, 37; neurasthenia, 26; dementia præcox, 24; G.P.I., 16; mania, 13; confusional insanity, 11; secondary dementia, 10; and alcoholic insanity, 9. The corresponding figures for the cases from the Expeditionary Force in France may also be quoted. These amounted in the same year to 1652, of which 536 were eventually discharged to some civil occupation, while 75 were sent to asylums, 11 died, and no less than 175 were sent to home duty with the army. Among the 1652 were 309 cases of melancholia, 242 of delusional insanity, 233 of mental deficiency, 179 of confusional insanity, 135 of mania, 127 of dementia præcox, 99 of neurasthenia, 78 of G.P.I., 63 of shell shock, 33 of mental stupor, and 19 of alcoholic insanity.

We wish to emphasise only one point out of much that is instructive—viz., that of 258 home mental cases 176 recovered and went back to work, while of 1652 expeditionary cases 711 recovered and also returned to work. These figures supply one more confirmation, if such were needed, of the contention that the opening of reception hospitals, as distinct from asylums, for the early treatment of the psychoses and psychoneuroses will materially advance matters in this field of medicine. THE LANCET has many times dealt with this subject, and has urged strenuously that the

unfortunate civilian patient should not be handicapped as compared with the military patient. The success of the military mental hospitals is proof conclusive of the immediate necessity of tackling the problem seriously for the civilian. As things stand at present, it is scarcely an exaggeration to say that if a medical officer connected with an asylum is consulted by some one who fears he has incipient mental trouble the only thing to be done is to tell him to "go away and get much worse," when a general practitioner will be able to certify that he is fit for admission to an asylum. Surely, one of the ironies of the situation is that certification is mainly in the hands of men who are not familiar with the subtleties of pathological mental states. The goal to be aimed at is that all cases should pass through a reception hospital prior to certification, and that the latter, if necessary, should be carried out in the special hospital by properly qualified men. The advantage of being able to treat mental cases in early non-certifiable stages is too obvious for the point to be laboured. It is satisfactory to record that a select committee of the Medico-Psychological Association is sitting to deal with such proposed reforms of the Lunacy Laws as will incorporate all the valuable experiences gained by the successful methods of treating military mental cases, the elaboration of which is one of the outcomes of the war that have brought good in their train.

HEMIPLEGIA DUE TO TUBERCULOUS MENINGITIS.

TUBERCULOUS meningitis in adults differs in many ways from the disease in children. Frequently it shows a tendency to be circumscribed to a point in the cortex and the symptoms suggest a focal lesion. At a meeting of the Académie de Médecine of Paris M. T. Legry reported a case in which the symptoms were so typically hemiplegic that a different disease was suggested.

A woman, aged 31 years, was admitted into the Charité Hospital on Sept. 6th, 1915. She had felt fatigued for two months and for a week had noticed at irregular intervals tingling beginning at the extremities of the left foot and hand and spreading over the whole of the left half of the body. She coughed a little, but examination of the chest was negative, and there had never been hæmoptysis. On the left side the knee-jerk was exaggerated, Babinski's sign was present, and sensibility and muscular power were diminished. In walking the left leg was dragged. Lying down the patient could not raise the left leg more than 20 cm. above the bed. Movements of the left arm were also limited. The temperature was 98·6° F. Because of the age of the patient, the clearly organic character of the hemiplegia, and the absence of other cause which might be invoked, specific hemiplegia, probably the result of arteritis, was diagnosed. Iodide injections were given and blood was taken for a Wassermann test. On the following days the symptoms persisted; there was no vomiting, stiffness of the neck, or sign of Kernig. On Sept. 16th the temperature rose to 102·2° and paresis appeared in the right lower limb. Lumbar puncture yielded fluid under very high pressure which presented abundant lymphocytosis and contained tubercle bacilli. Death occurred on Sept. 24th.

The necropsy showed a few isolated tubercles at the apices of the lungs. At the superior border of the right cerebral hemisphere was a thick granular tuberculous patch of the size of a 2-franc piece. In the longitudinal fissure it encroached on the paracentral lobule and on the external surface of the hemisphere on the ascending frontal and parietal convolutions. It was very adherent to the subjacent nervous tissue. In the rest of the pia mater were found some whitish-grey spots representing early tubercles. In this case all the symptoms, as well as the age and the absence of pulmonary signs, pointed to specific disease. Only the results of lumbar puncture enabled the diagnosis to be rectified.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Vocational Re-education of War Invalids.

INTERESTING experiments in the vocational re-education of war cripples have been carried out at Bordeaux and recently reported to the Academy of Medicine. Dr. Gourdon's observations extend over 5014 cases with loss of limb or grave and incurable injuries, of whom 73 per cent. have been able to resume their trade (with or without prosthesis) without special training; 27 per cent. required some new education or a modification of their old work. 30 per cent. only of the patients examined were disabled in the upper extremity. In each case a careful examination of physical and psychical aptitude was made, for the war cripple varies greatly in both these respects, and it is essential to place him under the surveillance of instructors and foremen who can adapt the technical methods of a craft to the degree of intelligence, energy, and skill, as well as to the age of the cripple. 62 per cent. of the patients at the Bordeaux centre were agricultural labourers, and of all cripples the worker on the land most readily resumes his former work. He is fond of it, he knows his work thoroughly, and it is work which does not demand precise movement. Thus 85 per cent. of the smallholders or farmers, and 48 per cent. of the gardeners, were able with suitable appliances to resume work at once. Cases with loss of hand or forearm have shown practically normal output of labour; with loss of arm 75–85 per cent. of the normal; with disarticulation of the shoulder 40–50 per cent. Among lower limb cripples only those with amputation through the thigh showed any considerable handicap; in this case an output of 50 per cent. of the normal. Nearly all the cripples are apt at manual work, whether sitting or standing, the diminution of output not exceeding 10 per cent. Professor Bergonié is, from his own experience, strongly in favour of re-education by agricultural work, considering it greatly superior to, and more rapid in results than, all the methods of artificial physiotherapy practised in urban hospitals, the field-work being continued all day and every day under the supervision and direction of doctors. In the Bordeaux area during one year cripples undergoing the agricultural cure have furnished 107,000 days' work on the fields.

A Preventive and Curative Serum for Gas Gangrene.

Médecin-inspecteur Vincent, professor at the Military School of Medicine of Val-de-Grâce, has announced to the Academy of Science the discovery of a serum, prepared in collaboration with M. Stödel, with which he has successfully treated gas gangrene. The action of the serum is both preventive and curative. Guinea-pigs injected with the serum after previous inoculation showed a mortality of only 4 per cent., against a rate of 80 per cent. in the non-injected. On the strength of these results M. Vincent determined to try the curative effect upon man. Thirteen patients suffering from gas gangrene, all in a serious, four in a desperate, condition, were thus treated by him, with the result that 11 recovered. These results augur well for the new method, details of which will be furnished later, as observations are being continued.

Shock and Muscular Autolysis.

In order to decide the question of the toxicity of muscular autolysis occurring at the seat of the wound, which has been regarded by some as the principal cause of the grave symptoms of traumatic shock, M. Pierre Delbet and M. Karajonopoulos have made a series of observations which seem to establish the part played by auto-intoxication. After operating upon dogs and guinea-pigs damaged tissue from the region of the wound was taken immediately after death, finely triturated with normal saline, and incubated at 37° C. The filtered extract was then injected into the peritoneum after careful sterilisation. In dogs it was found impossible to obtain a sterile extract for this purpose. With guinea-pigs and rats, especially with the latter, which live on a flesh diet resembling that of the soldiers, the authors obtained highly autolytic extracts producing in animals all the symptoms of shock a few moments after injection—acceleration of respiration, absolute inertia, and abolition of reflexes, then gradual cessation of respiration and death in coma. They conclude

that the toxic action of muscular autolysis in shock is a very definite factor to reckon with, and that in cases of clinical shock it is essential to proceed as soon as possible to resection of the damaged tissues, or even to amputation of the limb, and that to delay intervention until the patient has recovered from shock is fatal.

August 1st.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

The Scientific and Industrial Council of Canada.

Professor A. B. Macallum, now chairman of the Scientific and Industrial Research Council of Canada, to which he was appointed some months ago, has presented his first report. It is his view that research work along the lines indicated by the formation of the Council should be conducted at the Universities of McGill and Toronto. He points out that when the war closes Canada will be bearing an enormous burden—an annual budget of $300,000,000, or possibly $350,000,000, and in addition heavy taxation of all kinds. There will be keen competition in international trade; and those nations will best succeed whose industries are organised on a scientific basis. As every part of the Empire is devoting great attention to the modern aspects of industry, Canada cannot afford to lag behind. The Council proposes that there be a central institute established forthwith, with guilds in various parts of the Dominion. In the central institute it is suggested that there should be a considerable number of laboratory units, or series of rooms, provided with free light, heat, and where necessary motive power, to be available for use by the various guilds. Industries, universities, and governments concerned are urged to take active steps immediately; and as the Dominion of Canada is enormously rich in undeveloped resources, the first requirement is thoroughly trained scientific experts.

The Prescribing of Liquor in Ontario.

One physician in Toronto recently issued 1274 prescriptions for liquor in 11 days. He was summoned to the police-court on four specific charges and was fined on all four, making a total of $1200. The matter was gone into thoroughly by the Medical Council of Ontario, which was in annual session the week when the cases came to trial, and it was found that many members of the medical profession in Toronto were giving more prescriptions than the practice of medicine warranted and than the law considered necessary. The Ontario Medical Council will petition the Legislature to reduce prescriptions from one quart to eight ounces; and the Ontario License Commission, under whom the law—the Ontario Temperance Act—is administered, will hereafter require vendors under licence to report all prescriptions issued by each physician for liquor on the tenth of each month, so that a record may be kept of the total of each physician for the month.

McGill University and the Admission of Women to the Faculty of Medicine.

Under the following resolution the Corporation of McGill University, Montreal, will admit women to the study of medicine:—

"That the Faculty recommend to Corporation that women be admitted to the study of medicine provided they had taken a degree in Arts from a recognised university; or that they take the double course of B.A. and M.D., or B.Sc. and M.D., at McGill University; or that they have completed the first and second year in the Faculty of Arts at McGill University, and thus give evidence that they are sufficiently mature and otherwise qualified to take up the study of professional branches. The Faculty further recommends that, inasmuch as in certain subjects separate laboratory accommodation and equipment are highly desirable, a strong appeal be made for some addition to the available funds of the Medical Faculty."

Toronto, July 2nd.

PROFESSOR JOHNSON SYMINGTON'S RETIREMENT.—At a recent meeting of the Senate of the Queen's University, Belfast, reference was made to the services of Professor Johnson Symington, F.R.S., who had been compelled by ill-health to retire from the Chair of Anatomy, which he had occupied for 25 years. Dr. R. W. Leslie attributed the high reputation of the Belfast School of Medicine in no small degree to the thorough training in anatomy received there.

TUBERCULOSIS.

French Provision for Military Cases.

THE gift on France's Day of £75,000 by the Joint War Committee of the British Red Cross towards a hospital and a farm colony for the use of French soldiers suffering from tuberculosis, reminds us that it was the American Red Cross which made it possible to complete in March of this year the large military sanatorium at Bligny, where, under the care of Dr. L. Guinard, cases of all stages are accommodated in separate rooms. For this isolated method of treatment, hitherto only available in France for a few well-to-do patients, Dr. Guinard has coined the word "alveolisation." Each patient has his own south balcony with chaise-longue.

A Factory Sanatorium.

A special investigation committee of the Medical Research Committee issued in 1915 a report on the incidence of phthisis in relation to the boot and shoe trade, and this report contained a recommendation for the establishment of a factory sanatorium wherein employment could be found for tuberculous boot and shoe operatives under modified sanatorium conditions.

This report was communicated by the Local Government Board to the Leicestershire and Northamptonshire county councils and the Leicester and Northampton borough councils, asking them to furnish the Board with their observations in regard to the practicability of the scheme and the possibility of combined action by the authorities concerned. A joint conference has just been held at Northampton at which Dr. F. J. H. Coutts (for the L.G.B.) and Dr. T. M. Legge and Dr. E. L. Collis (for the Home Office) met representatives of the four councils.

After full discussion a committee was appointed representing the four authorities, and also the Boot and Shoe Manufacturers' Associations and the National Union of Boot and Shoe Operatives, to consider practical details. This committee has now reported—

(i.) That the scheme for a factory sanatorium is impracticable owing to the complex operations of modern boot and shoe making; (ii.) that it is undesirable for a man who has contracted phthisis in the trade to go back to the same occupation: and (iii.) that it might be possible for certain processes connected with the boot and shoe industry to be carried on in workshops attached to sanatoriums under strict medical supervision.

These views have now been endorsed by the Conference, which passed a unanimous resolution to the effect that, whilst a factory sanatorium is not practicable, nevertheless the Government should give financial support to workshops connected with existing sanatoriums.

Provision of Institutional Treatment in London and Lancashire.

In reply to a recent question in the House of Commons, Sir A. Griffith-Boscawen admitted, on behalf of the Ministry of Pensions, that there is still delay in obtaining institutional treatment for discharged men in London suffering from tuberculosis. In order to reduce this delay the period of sanatorium treatment had been shortened and discharged men were being given priority of entry over civilians. He added that he was now conferring with the London Insurance Commission and with the Local Government Board with the object of securing more adequate treatment for discharged men. In Lancashire, as revealed by the answer to a question addressed to the Local Government Board, although accommodation is deficient for civilian patients, there is at present no waiting list of military tuberculous patients.

Segregation of Advanced Cases.

The Metropolitan Standing Joint Committee decided last week to make representations to the Local Government Board and to the Metropolitan Asylums Board, urging measures for placing an institution at the disposal of local authorities for the accommodation and isolation of advanced cases of tuberculosis.

Arrangement for X Ray Examination.

Lancashire county council reports that correspondence has passed between the County Tuberculosis Committee and the Local Government Board with reference to the X ray examination of patients suffering from tuberculosis at the private rooms of the honorary radiologists attached to the Manchester Royal Infirmary and the Salford Royal

Infirmary. This course has now been approved by the Local Government Board in consequence of the difficulty of carrying out the examinations in these infirmaries at the present time, provided the fee paid does not exceed £1 11*s.* 6*d.* for a single examination, or £1 1*s.* for each patient if more than one attends for examination at any given time. The committee recommends that a sum not exceeding £100 be granted to cover the cost of such examinations during the financial year ending March 31st, 1919.

A West Sussex Sanatorium Scheme.

At the meeting of the West Sussex county council on July 26th an expenditure not exceeding £2500 was sanctioned for the provision of temporary accommodation for the treatment of tuberculosis. A definite scheme to make provision for sanatoria and hospitals for treating tuberculosis was before the council at the outbreak of the war, when it was decided not to proceed during the duration. West Sussex cases have been sent to Ockley Sanatorium, where out of 33 patients no fewer than 15 were from West Sussex. But that sanatorium being no longer available, temporary provision has to be made, and premises are being sought with grounds where huts can be erected and which may hereafter become a permanent place of treatment. It was stated at the meeting of the council that the demands for treatment were constantly increasing, and in addition to the civil patients the demand on behalf of discharged fighting men was greatly increasing.

Report on Miners' Phthisis in South Africa.

In his first annual report for the 12 months ending July 31st, 1917, to the Secretary for Mines and Industries, Pretoria (U.G. 6—'18. Cape Times Limited. Price 4*s.* 9*d.*), Dr. W. Watkins-Pitchford, chairman of the Miners' Phthisis Medical Bureau, gives the results of the first periodical examination of the working miners who presented themselves at the bureau. The figures furnish for the first time a comprehensive survey of the men affected with tuberculosis, silicosis, or both diseases simultaneously. Of the 14,625 miners examined 38 were found to be suffering from pulmonary tuberculosis uncomplicated by the presence of silicosis, a rate of 259 per 100,000. 738 men were the subjects of silicosis uncomplicated by the presence of tuberculosis, a rate of 5046 per 100,000. Of these silicotic men 58, or 7·8 per cent., had reached the secondary stage of their disease. Owing to the slight degree to which early silicosis interferes with health and working capacity the subjects of the disease in its primary stage tend to accumulate in the mines. A condition of tuberculosis-with-silicosis was discovered in 95 men, giving a prevalence-rate of 649 per 100,000. On the basis of these results it appears that, of all those who were silicotic, 11·4 per cent. were also affected with tuberculosis. Dr. Watkins-Pitchford adds that this observation should not be taken as implying that approximately this high percentage of all silicotics develop tuberculosis for the following reasons: (1) That a miner may first become tuberculous and then silicotic; and (2) tuberculosis may appear in an active form long after the man has abandoned his work on account of silicosis. Had the Bureau been empowered to obtain the compulsory removal of purely silicotic miners, the prevalence of silicosis would have exhibited a decline similar to that shown for tuberculosis. Dr. Watkins-Pitchford's remarks on factitious silicosis may be quoted:—

> Despite time-honoured rumours to the contrary, it is probable that the radiographic and other physical signs of silicosis cannot be counterfeited; an unsuccessful attempt was brought to light last year. An applicant for compensation had obtained a supply of a fine black powder, by the inhaling of which, as he had been assured, the signs of "Miners' Phthisis" would be temporarily produced. The man had inhaled this material on three nights preceding his examination, but no indications of silicosis or of any other disease could be detected. The powder consisted on analysis of carbonised vegetable matter finely ground with ferruginous clay and sand. A few experiments with this material showed that, in order to produce any abnormal X ray signs, it would need to be inhaled in so large a quantity that asphyxia would result.

The Swiss Campaign.

The handbook of 600 pages issued by the Swiss Central Commission for Combating Tuberculosis (Berne: A. Francke. Price 6 frs.) has a melancholy interest, as it was originally planned as a gift-book for the Twelfth International Tuberculosis Conference which should have been held in Berne in September, 1914. The book is useful in giving a concise picture of the measures taken in a relatively small and compact country, and is to some extent a memorial to Dr. H. Schmid, the head of the Swiss Health Bureau, who died in 1916, and who was largely responsible for the organisation of these measures. A good account of the work done by women is given by Dr. Martha Sommer, of Berne, and Mlle. E. Serment. Prophylaxis is dealt with by Dr. A. Cramer, of Geneva. A bibliography is appended of work on tuberculosis carried out or published in Switzerland.

REPORT FOR 1917 OF THE COUNTY M.O.H. AND SCHOOL M.O. OF LONDON.[1]

Dr. W. H. Hamer's report to the London County Council has been published. To everyone interested in the welfare of the metropolis we commend this masterly production as deserving of attentive study.

PART I.—PUBLIC HEALTH.

Meteorology.—The relation of rainfall to disease has for long been a subject of scientific interest, and the unexampled wetness in South-East England since the outbreak of war is doubtless partly accountable for the relatively low death-rate of London during the past three years. Is it, Dr. Hamer asks, a mere coincidence that the most violent explosions ever known to mankind have been accompanied by an excess of rain more pronounced in districts contiguous to the seat of war than in any other part of the United Kingdom? This question still awaits solution. The climatic conditions of 1917 were, on the whole, propitious, and the health of the metropolis compares favourably with that of 1916, itself a year of low mortality. The long period of cold weather in the early part of the year took its toll of the aged; but, on the other hand, the wet weather in July and August, with the consequent absence of high temperatures, was favourable to infant life, the mortality from diarrhœa being low. In the autumn also, except during the closing weeks of the year, atmospheric conditions were again favourable, the loss of life from respiratory affections and influenza being below the quarterly average. The death-rate among civilians in 1917 was 15·7 per 1000, or 1·1 above that of the preceding year. The higher death-toll of last year is accounted for mainly by the excessive prevalence of measles among children in the winter months. *Infantile mortality* was equal to 104 per 1000 births, against 89 in 1916. The rate was considerably above the average in the first quarter and again at the close of the year, the suggested cause in both cases being adverse climatic conditions.

Infectious Diseases.

Notwithstanding the exceptional circumstances of war, it is noteworthy that the prevalence of the notifiable infectious diseases was for the most part low, the chief exceptions being *diphtheria* and *cerebro-spinal fever*, both of which nevertheless showed a slight decline upon the incidence of the preceding year. The number of *scarlatinal attacks* notified in each of the last two years has been far below any previous record since 1890, the first year of compulsory notification. *Typhoid fever* among the general population remained at the low level of the preceding year, itself low in comparison with 1915. At the end of the year a group of cases among consumers of oysters was recorded. Small outbreaks of typhoid fever occurred in asylum populations drawing patients from London, and certain more extensive asylum outbreaks were reported in other parts of the country. The prevalence of intestinal affections and the raised aggregate death-rate among the insane generally seem to indicate that in this section of the population the effect of war conditions was pronounced.

Influenza: its varieties and complications.—Dr. Franklin Parsons in his report on the influenza epidemic of 1889–90 recognised three forms of influenza: (*a*) nervous, (*b*) catarrhal, (*c*) gastric. "These three forms," he wrote, "have all been observed in cases occurring together under the same roof, and are evidently mere varieties of the same disease." Ever since the establishment of civil registration the three conditions known as influenza, bronchitis, and pneumonia have shown increase from time to time, as though in response to the stimulus of an epidemic influence. In other words, the great influenza epidemic of 1847–48 and the following

[1] P. S. King and Sons, Westminster, S.W. 1. Price 1*s.*

pandemic of 1890, with the subsequent epidemic waves of recent years, have each and all been accompanied by noteworthy increases in the deaths returned as from bronchitis and pneumonia. It is remarkable that for some years past there has been apparent in London an approximation, or merging into one another, of the prevalence of illness attributed in the early months to *cerebro-spinal fever*, and later, in the summer months, to *poliomyelitis*. From an epidemiological standpoint the question hence arises as to the need of associating the prevalence of influenza not only with respiratory and gastro-intestinal illness, but also with illness in which disturbances affecting the central nervous system predominate. It has, in fact, become obvious that the present narrowed connotation of the term influenza requires enlargement. Towards the close of 1917 there was a new development which has special interest in connexion with recent observations respecting the relation of influenza to these conditions respectively. In 1916 there had been considerable outbreaks of poliomyelitis in London and in New York. Moreover, in that year, as well as in 1917, cerebro-spinal fever has prevailed here synchronously with influenza. But towards the close of 1917 a distinct change of type was manifested. Cases of illness with cerebral, as well as others with pulmonary or with gastro-intestinal, symptoms were prevalent, and it soon became manifest that a special epidemic influence was at work. At first suspicion fell upon food, "botulism" and "solanism" being invoked as the source of the trouble. But as no evidence of this was forthcoming it was agreed that most of the cerebral cases were to be regarded as polioencephalitis dependent on epidemic influence, a view which is not held universally. In Paris M. Netter has described similar cases, pointing out that like prevalences followed the influenza pandemic of 1889–90. In London the condition was described as "epidemic stupor," lethargy being a prominent symptom. During the spring of the current year polioencephalitis was present in epidemic form in South Africa and in Germany, influenza raging in Spain, and a "new disease" in Sweden.

Epidemic constitution of 1917–18.—Eminently instructive are Dr. Hamer's remarks[2] on the epidemiological relations of the various illnesses described, and it remains to be seen how the views of the epidemiologist and bacteriologist are to be reconciled. We give this paragraph of the report in his own words:—

"Just as encephalitis, febrile cerebritis, influenza, and sweats prevailed in Europe 400 years ago, and have periodically occurred since that time, so, history repeating itself, they have again recently spread widely in the old and new worlds. Thus it would appear that the events of the last few months once more strikingly illustrate the 'posting character,' the unexpected manifestations and the protean behaviour of 'influenza'; and incidentally the close connexion between polio-encephalitis, poliomyelitis, cerebro-spinal meningitis and influenza now seems to be established. ..... It may be that recent events will place a limit upon the too exacting claims of the causal organisms, and lead to some exercise of the recognised principle known as the Law of Parsimony in considering additions to the list of new diseases. The want of such recognition during the last four years has made the work of administration difficult, and during the last few months there has been quite an outbreak of ephemeral new diseases which, on inquiry, have turned out to be old foes with faces new only to those not versed in the history of epidemics."

Dysenteric disease.—A localised epidemic of severe illness associated with dysenteric symptoms was reported in Chelsea last autumn, occurring for the most part in a poor neighbourhood by the river. The disease ran a course of five or six days, and in fatal cases post-mortem examination revealed extensive ulceration and swelling of the mesenteric glands. Children and young adults were chiefly affected. Of the 28 cases reported 10 occurred in one family. No light was thrown on the origin of infection by inquiry as to food and water-supply or sanitary arrangements. But a soldier who had recently suffered from dysentery was found staying in the house of one of the families attacked, and in him the whole outbreak is believed to have originated. About the same time a similar outbreak occurred in Islington, where seven persons were attacked in two adjoining houses. A discharged soldier was found living with the family first infected. Within a fortnight of this soldier's arrival two adults contracted an acute diarrhœa of dysenteric character, and about a week later two children of the same household developed a similar condition, which proved fatal to them both. All the appearances of dysentery were revealed post mortem in each case. In the adjoining house three more cases of a like nature occurred about the same time.

In view of the extensive epidemics of dysentery recently reported in the Central Empires and in Eastern Europe, it is important that vigilance should be exercised to guard against similar occurrences in this country through the medium of military cases. The account of a limited outbreak of bacillary dysentery occurring at an institution in the eastern counties early this year, and described by Dr. Buchanan in our columns, may be studied with advantage.

Tuberculosis.

For nearly 50 years past London phthisis mortality has, with slight exceptions, fallen from year to year; the first indication of pause in the decline was in 1914. Among the *civil population* alone there were 6908 deaths from pulmonary tuberculosis in 1917, against 6491 and 6875 in the two preceding years respectively. As the annual deaths among the *entire population* in the years 1911–14 had averaged only 6286, there has apparently been an increase in phthisis mortality in the course of the war. The hardships of wartime immediately increased the mortality of males of military age, but there has been also an increase in the female mortality during the war period. The arrest of emigration on the outbreak of hostilities may be credited with a certain influence on the death-rate as well as the retention in this country of patients who would otherwise have gone abroad and whose deaths are included in the London registers. Lack of food and disturbance of the normal dietary are factors powerfully increasing susceptibility to tuberculous infection, and in the year under notice many essential articles of dietary were either scarce or expensive. To this circumstance some share of the increased mortality was due.

The tuberculosis scheme adopted in 1914 was continued and extended in 1917. The number of cases receiving treatment in that year included 670 adults and 933 children. Treatment in 37 dispensaries is provided under the borough councils' schemes.

(To be continued.)

FOURTH ANNUAL REPORT OF THE GENERAL BOARD OF CONTROL FOR SCOTLAND.[1]

THE report has for economic reasons been compressed as far as is consistent with the requirements of the Statutes, but, in fact, nothing of importance has been omitted, and it might almost seem desirable to confine it within its present adequate proportions for all future time. The Board reports that the work of the Mental Deficiency Act has had to be drastically curtailed. No expenditure upon new buildings has been undertaken, while in view of the fact that there is not likely to be any increase in the amount of the Parliamentary grant the local authorities have refrained from placing defectives under care, as they are entitled to do by the provisions of Section 26 of the Act. It has been found possible to place a restricted number of defectives under guardianship, but unfortunately many are not fitted for this form of provision for their care. Three institutions have been transferred with their staffs to the War Office for military hospitals, and as a large number of male attendants have been called to the colours it has become necessary to obtain from the military authorities a supply of Army orderlies to take their place. The total number of orderlies thus supplied amounted to 75. The Board expresses its appreciation of the action of the War Office in this matter, but we are disappointed that the report does not furnish any explanation of this rather curious exchange.

On Jan. 1st of this year there were, exclusive of those maintained at home by their natural guardians, 18,326 insane persons. This is a decrease of 559 upon the numbers of last year, three-quarters of the decrease being of men. The Board is of opinion that "the circumstances under which this decrease has occurred are of so unusual and complicated a nature that comment could not usefully be made at the present time." Among significant factors are mentioned the withdrawing of more and more men from civil life; the favourable conditions produced by the disappearance of unemployment and by higher wages; and the increase of the old age pension, which has retarded the

[2] See also THE LANCET, 1906, i., 568; ii., 1374.

[1] Edinburgh: H.M. Stationery Office. 1918. Price 3*d*. net.

admission into asylums of persons suffering from senile insanity of mild types. The total number of persons admitted to establishments during 1917 was 3137, which is 414 less than the average for the quinquenniad 1910–1914. It is satisfactory to note that whereas the average admission of voluntary patients for the 10 years 1908–1917 was 136, during 1917 it was 186. The increase is not great, but, we trust, indicates a gradually increasing confidence among the general public in the excellence of the care provided in modern institutions for the treatment of mental disorders. Of private patients 199 were discharged recovered during 1917, and of pauper patients 964. The number of private patients who died in establishments during the year was 285, which is 101 more than the average of the five years 1910–1914. The number of pauper patients who died was 1612, which is 348 above the average of the five years 1910–1914. It would be interesting to learn how far this increase of death-rate may be ascribed to the removal of old patients from long-accustomed surroundings necessitated by the transfer of some of the asylums to the military authorities.

It is reported that 400 acres have been added to the arable lands attached to the asylums. The production of edible vegetables has been further increased by utilising flower-gardens and recreation grounds. At the Glasgow Royal Asylum, ground formerly devoted to flowers has produced twelve tons of potatoes and other vegetables. The cultivation of chrysanthemums in the greenhouses has been discontinued and the space devoted to tomatoes, of which 1000 lb. were grown. Nevertheless, the procuring of adequate supplies has recently been attended with such difficulty that the Board has been compelled on various occasions to make representations to the Ministry of Food. The Board points out that from a quarter to a half of the inmates of modern asylums must be regarded as hospital cases, and that for the proper treatment of such cases a liberal and nourishing dietary is essential. The Board records its gratitude to the Ministry of Food that parts of asylums have been included within the definition of medical institutions or hospitals.

THE FUND TO REIMBURSE DR. J. H. BELL FOR HIS LEGAL EXPENSES.

THE following is the first list of subscriptions received :—

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Subscriptions should be sent to Dr. Kinnier Wilson at 14, Harley-street, London, W. 1, and will be acknowledged in the *British Medical Journal* and THE LANCET.

THE LANCET, VOL. I., 1918: THE INDEX.

OWING to the continued shortage in the paper-supply, the Index and Title-page to the volume of THE LANCET which was completed with the issue of June 29th have been printed separately, and copies have been supplied gratis to those subscribers who have, up to August 7th, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such applications should be sent in at once.

Correspondence.

"Audi alteram partem."

THE FUTURE OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—In a recent issue of your valuable paper Dr. Lauriston Shaw a little overstates the views held by "the extreme left party." It would not compel every medical man upon registration to enter the service of the State, but would give them a free choice between State service and private practice. It would, however, insist that everyone who did enter the service should devote the whole of his time to it. Again, it would not countenance the State forcing upon each member of the community such medical ministrations as it (the State) deemed necessary for the maintenance of his physical health. On the contrary, it would insist on all matters even remotely connected with the diagnosis and treatment of disease and with its prevention being left entirely in the hands of the medical profession. It is satisfactory to note that the "central party" has advanced a long way towards the "left" in its desire for some form of organised State medical service. The "extreme left," too, has, I think, come near to the central party in its recognition that in any future scheme bureaucratic control of, and interference with, medical matters must be carefully guarded against.

As pointed out by Professor Benjamin Moore and myself in your columns, the outstanding differences of opinion resolve themselves into whether the service should be whole-time or part-time, whether remuneration should be by salary or some form of capitation grant, and whether the benefits of the service should be free and open to all or confined to the poorer classes of the community. Put in another way, the "central party" would exclude a large section of the community from the benefits of the public service and would have part-time medical officers so as to enable them to compete for those excluded as private patients, and in order still further to safeguard the supposed advantages of competition it would continue and expand the present panel system amongst those eligible for the benefits of the service. The "extreme left party," on the other hand, would like to abolish competition for private gain, feeling that it has many disadvantages, and that the science of medicine at all events does not need such an artificial stimulus to progress. It would, therefore, like to see a whole-time salaried service; and, further, as the sole object of any organised medical service is to ensure a healthy nation, it would like to see its benefits extended to the whole population as the best means of securing it. It would like to see the coming service made so complete and efficient in its organisation that everyone would be only too willing to take advantage of it, and the whole profession proud to belong to it. Private practice and competition would then die a natural death.

Sir Bertrand Dawson, curiously enough, whilst seeing at any rate some of the evils of competition for patients, considers that the abolition of private practice would be gravely detrimental to both doctors and patients. Under competition, he points out, reward goes to the physically strong men with plausible tongues: too little to men with brains and a conscience. The abolition of competition for private patients evidently would not be an unmitigated evil.

Dr. Lauriston Shaw, in speaking of general practitioners and specialists, says, "competition and coöperation cannot go hand in hand." Surely this truism is of universal application, and consequently competition between specialist and specialist, and between general practitioner and general practitioner, is as fatal to effective coöperation as is competition between specialist and general practitioner. In short, competition for personal gain must kill the utility of any organised medical service. Sir Bertrand Dawson compares the provision for health with the provision for education, and yet, though for the latter purpose there is a service of whole-time salaried teachers, he will not hear of whole-time salaried medical officers for the former. In schools salaried teachers undertake the subject in which they are most proficient, and they all work together for the pupils' good. It would be just as reasonable to allow each teacher in a school to compete for pupils and fees as it would be to allow doctors

to compete for patients and fees under the roofs of the magnificent buildings which Sir Bertrand Dawson pictures as health centres in every locality. Just as teachers coöperate to secure well-educated children, so must doctors coöperate in the future to secure healthy individuals, remembering that "competition and coöperation cannot go hand-in-hand," and that any effort to promote a partnership between the State and medicine based on a compromise between competition and coöperation is bound to fail.

In conclusion, may I heartily welcome Dr. Lauriston Shaw's suggestion of a national medical council acting as a professional parliament on the lines of the Whitley Report. Such a council would, I believe, be an efficient means of safeguarding the interests both of the public and the medical profession, and would remove many of the objections to a public medical service. Its success, however, would greatly depend on the profession having a clean-cut idea of its functions and duties towards the community as a whole as represented by the State on the one hand, and on the other hand towards individuals as patients.

I am, Sir, yours faithfully,

London, W., July 22nd, 1918. CHARLES A. PARKER.

MUCOID FORMS OF PARATYPHOID BACILLI.

To the Editor of THE LANCET.

SIR,—Captain W. Fletcher's paper in your issue for July 27th calls to my mind some observations I have made when working with Congo-red as a background stain which might be of use to him or to others working on similar lines. He describes a fine stippling of the background in making films of the mucoid colonies. A definite stippling results from mixing an emulsion of mucilage of tragacanth with Congo-red and spreading a film in the usual way. The size of the granules seems to vary in proportion to the strength of the mucilage emulsion; the granules are very coarse where a thick emulsion is used.

As regards the demonstration of mucoid bacterial capsules with Congo-red, working with an organism which had the characteristics of *B. mucosus capsulatus* I used the following method with a fair degree of success. A small amount of the gelatinous growth is placed at one end of a glass slide; this is then spread along with the end of another slide, using considerable pressure and a side-to-side movement. The slide is dried in the air and lightly, and not too thickly, overspread with Congo-red solution, dried, and treated with acid alcohol in the usual way. In certain parts of the film, usually at the margins and extreme end, the microscope will show the bacilli lying each in an oval dark blue area. At the margins of the film these are often seen lying like large shadows thrown in the direction in which the film was dragged and conforming exactly in contour to the bacillus from which they were clearly derived. Apparently the capsule is a definite envelope, and this being ruptured or in some way injured the dye is able to enter, and the intact bacillus is clearly outlined inside the capsule, which latter is much more deeply stained than the surrounding background.

Such appearances were not obtained with non-mucoid growths of bacilli, but I have found them in films made from mucoid colonies of *B. coli*, such as one frequently sees on MacConkey plates.

I am, Sir, yours faithfully,

T. H. C. BENIANS.

Addington Park War Hospital, Croydon, July 30th, 1918.

MUCOID FORMS OF BACTERIA: LOUIS JENNER'S WORK.

To the Editor of THE LANCET.

SIR,—In relation to the paper by Dr. W. Fletcher on Capsulate Mucoid Forms of Paratyphoid and Dysentery Bacilli I should like to call attention to some old observations of the late Dr. Louis Jenner, the originator of Jenner's stain. When director of the clinical laboratory at St. Thomas's Hospital he was in possession of capsulated and non-capsulated strains of *B. coli* which he had isolated. The characters of these strains were constant under constant conditions but could be modified, and a capsulated strain converted into a non-capsulated and vice versa. So far as my memory serves, this change was effected by passage through animals. Jenner made the important observation that the capsulated strain was much more virulent than the non-capsulated. Whether these observations were ever published or not I am ignorant. Owing to Jenner's dislike to the publication of incomplete work and his untimely death much that was of value has been lost.

I am, Sir, yours faithfully,

St. George's Hospital, July 30th, 1918. CHAS. SLATER.

ACUTE LYMPHOCYTHÆMIA.

To the Editor of THE LANCET.

SIR,—I was interested to read of Captain J. C. Tull's case of Acute Lymphoid Leukæmia in THE LANCET of June 8th, also your annotation of June 29th on a similar case of a French soldier. Perhaps, therefore, this note of the same condition in a sailor may be of interest:—

An A.B., aged 20, was admitted to R.N. Hospital, Chatham, on Sept. 20th, 1916, as a case of tubercle. Up to six weeks previously he had been in perfect health, when the symptoms he was suffering from started gradually. These were general weakness, dyspnœa on slightest exertion, and attacks of epistaxis and hæmatemesis. On examination lymphatic glands all over body were found to be discretely enlarged and of elastic consistency, their average size being about that of a filbert. Spleen was palpable 2 inches below costal margin. There was no rash.

Blood count: Erythrocytes, 1,008,000; leucocytes, 14,200; hæmoglobin, 20 per cent.; colour index, 1; polymorphonuclear cells, 16·7 per cent.; small lymphocytes, 74·0 per cent.; other mononuclear cells, 9·3 per cent. A few normoblasts were seen, but very little alteration in size, shape, and staining characteristics of red cells was evident.

The patient died six days after admission. Post-mortem examination: Subserous hæmorrhages, fatty heart, large spleen, enlarged hæmorrhagic thoracic and abdominal lymph nodes. Slight increase in marrow of a greyish colour in sternum and tibia. Microscopically, heart, liver, and kidney showed fatty changes and leucocytic infiltration.

I was surprised to see it stated that a low leucocyte count was rare in this condition. Panton, Tidy, and Pearson state that in six out of eight cases of acute lymphatic leukamia the leucocyte count was within normal limits.[1] The above case is rather curious as it was one of three cases of leukæmia to be admitted within two months, whereas in the previous 10 years I had not seen a case in the Navy.

I am, Sir, yours faithfully,

S. F. DUDLEY,

One of H.M. Hospital Ships, July 18th, 1918. Staff Surgeon, R.N.

SKIN-GRAFTING.

To the Editor of THE LANCET.

SIR,—An article appears in THE LANCET of July 7th, 1917, on skin-grafting by Captain S. R. Douglas, Captain L. Colebrook, and Mr. A. Fleming. During 12 years' surgical practice in India I have used skin-grafts for a variety of cases, particularly burns, elephantoid tumours, chronic ulcers, &c., and I have always employed Thiersch's method, slightly modified. The results have been good in the great majority of cases, and I am not at all convinced that the operation advocated by the authors is a better one, and the special apparatus, &c., complicate an otherwise simple procedure. Skin-grafts have seldom become dislodged and most of the scars have been good. The raw surface from which the grafts have been taken heals very rapidly and I have *never* known it to go septic if dressed with gauze soaked in picric acid lotion. It may be that the authors have employed Thiersch's grafts cut too thin, for it is important that part of the dermis should be taken with the skin-grafts.

It has always been my experience that the weakest parts of the scar after skin-grafting are the skinned-over gaps between individual grafts, and in the authors' method these are multiplied. Moreover, the operation is more tedious and may not be completed at one time, and healing of the wound is therefore delayed.

Suppuration is a serious factor to consider in skin-grafting, but the destruction of grafts by tryptic ferments can generally be prevented by making small holes in the large grafts opposite the small pockets or depressions in the granulating area, and by applying suitable dressings on the lines described by the authors. In India green oiled-silk with small perforations is used as a covering, and over this

[1] Quarterly Journal of Medicine, July, 1914.

gauze is applied and kept moist by a saline lotion such as Locke's solution. The marvel has always been to me how persistently grafts adhere and grow in septic wounds when they are kept at rest and provided with moisture and drainage. I may mention here that in my experience pigmented skin-grafts of Indians are more resistant than grafts taken from the less pigmented skin of Europeans.

In such an operation as removal of elephantoid overgrowth of the scrotum the whole penis has to be skin-grafted at the end of the operation, and it would be most difficult to do this successfully by multiple small grafts. By employing Thiersch's method one large and thick graft is taken and fixed to the penis by fine sutures at corona, at base of penis and at line of junction of two edges of graft. When proper dressings are applied such a graft can be readily kept in position.

It requires a certain amount of practice to use Thiersch's razor efficiently, but with experience grafts of about $4 \times 1\frac{1}{2}$ inches can be made of almost any thickness. It is very important that the assistant should know how to keep skin of thigh taut while the graft is being taken.

Many of the devices described in the article under reference are most ingenious, but it is a question if they are necessary. Local anæsthesia by nerve-blocking and infiltration is an important advance on the method of general anæsthesia. The operation described by the authors may give good results in some cases, but it is important that the many advantages of large thick grafts should not be overlooked. In India they are constantly in use, and it was in the clinic of Lieutenant-Colonel C. R. Stevens, I.M.S., that I first saw large grafts applied in the way I have described in the operation for elephantiasis scroti.

I am, Sir, yours faithfully,

F. POWELL CONNOR,
Mesopotamia Expeditionary Force. Lieutenant-Colonel, I.M.S.

TEAM-WORK.

To the Editor of THE LANCET.

SIR,—I notice the following in your note upon the Cavendish Lecture before the West London Medico-Chirurgical Society: "We shall all endorse Sir B. Dawson's plea for the development of team-work in medical practice." If these words are intended to put the stamp of approval upon the present convulsive efforts to revolutionise the medical system of the country, I doubt whether you speak for the majority of the medical profession. By some the point may appear of minor importance. "Team-work" implies a few drivers, and the rest—cattle. What matter whether the poor dumb creatures realise or approve of their destination? Some very influential, able, and organised "leaders" are extremely busy in pushing forward grandiose schemes. The vast body of the profession is inarticulate, largely because leisure is wanting to take a practical interest in medical politics. Thus a golden opportunity presents itself for meddlesome and ambitious domination, to which two other factors contribute.

The first is the unprecedented political situation. The crisis of the war has forced upon us a makeshift constitution. We have a Government without the fullest constitutional authority, yet wielding dictatorial powers. We seem, indeed, to remember an understanding that these powers were to be used solely for war purposes, all controversial matters being banned "for the duration." But these dim memories are now dreamlike; and as we hear of vast schemes of reconstruction in every direction we wonder whether we are at last blessed with a Government of universal reformers. The second factor is the absence on service of a very large proportion of our doctors. Thus we have a unique, if ignoble, occasion for the strident grinding of the axes with which our teeth are being set on edge. Another aspect of the present reforming activity should be indicated. The zealots who are promoting these subversive changes and who are so determined to uproot the standards of individual liberty and individual effort are in very many cases men of established seniority, who will suffer least if their scheme miscarry, leaving a heritage of disaster to a younger generation.

I submit, therefore, that no steps are justifiable to revolutionise the medical profession until three conditions shall have been fulfilled: (1) Until we have a Government which can claim to be representative. Our present rulers, whether good, bad, or indifferent, represent nobody. (2) Until our colleagues have returned from the front. A nice reward it will be for their sacrifices if they come home to find everything turned upside down without having been consulted! (3) Until all members have had an opportunity of voting upon the proposals. What right have a few masterful individuals to coerce a great profession without taking account of the thousands and tens of thousands of its members who may prefer to be left to work out their own salvation?

I am, Sir, yours faithfully,

London, July 17th, 1918. E. O'CONNOR.

*** Teams do not drive; they pull, and all the medical profession must "endorse a plea" for pulling together. Such a misunderstanding of a well-known phrase spoils all the force of the subsequent rhetoric.—ED. L.

THE SERVICES.

ARMY MEDICAL SERVICE.

Col. J. Meek to be retained on Active List.

To be temporary Colonels whilst specially employed: Capt. (Brevet Major) C. H. S. Frankau, R.A.M.C., T.F.; temp. Major C. H. Miller.

ROYAL ARMY MEDICAL CORPS.

To be temporary Lieutenant-Colonels: S. L. Jones (whilst serving at the Notts Co. War Hospital), temp. Major (Hon. Lieut.-Col.) W. I. de C. Wheeler, and temp. Majors A. M. Paterson and H. W. M. Tims (whilst specially employed).

Major A. D. O'Carroll relinquishes the acting rank of Lieutenant-Colonel on reposting.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Majors C. T. Edmunds and H. G. Sherron, and Capts. (acting Major) E. Percival and A. C. Hammond-Searle.

The undermentioned relinquish the acting rank of Major on reposting: Capt. (Brevet Major) R. W. D. Leslie, Capt. A. S. Cane, Lieut. (temp. Capt.) R. Stowers.

To be acting Majors: Temp. Capt. C. W. G. Bryan, Capts. T. H. Balfour and J. J. D. Roche, Capt. (Brevet Major) D. M. Corbett. Temp. Capts. E. G. C. Price, A. Randle, S. B. B. Campbell, H. S. Davidson, H. Emerson, P. N. Vellacott, S. F. McDonald, H. H. White, R. W. S. Christmas, D. Gillespie, W. F. Neil, Temp. Capt. J. D. Gunn, Capts. H. D. Lane, M. J. Williamson, N. V. Lothian, R. E. Barnsley, A. S. Cane, W. F. Christie; Temp. Capt. E. Burstal; Lieut. (temp. Capt.) A. Mansell; Temp. Capts. (while specially employed) H. E. Rawlence, R. O. H. Jones, C. R. Wills, J. G. Heath (whilst commanding troops on a Hospital Ship).

T. P. Greenwood to be temporary Captain whilst serving at Notts. County War Hospital.

Lieutenants (temporary Captains) to be Captains: R. P. Cormack, D. W. Beamish.

J. C. McGregor, from St. Andrews University Contingent O.T.C., to be Lieutenant.

J. W. Gill and J. T. W. Stewart (temporary Captains) relinquish their commissions on account of ill-health contracted on active service, and are granted the honorary rank of Captain.

Canadian Army Medical Corps.

Temp. Major C. Hunter to be acting Lieutenant-Colonel while specially employed.

Temporary Captains to be acting Majors while specially employed: A. Blaif, H. O Boyd.

SPECIAL RESERVE OF OFFICERS.

Capt. N. H. Linzee relinquishes his commission on account of ill-health contracted on active service, and is granted the honorary rank of Captain.

J. K. T. Mills, from St. Andrews University Contingent O.T.C., to be Lieutenant.

B. G. Derry to be Lieutenant.

TERRITORIAL FORCE.

Major R. T. Turner to be acting Lieutenant-Colonel whilst specially employed.

Major (acting Lieut.-Col.) G. A. Troup relinquishes his acting rank on ceasing to command a Field Ambulance.

Captains to be acting Majors whilst specially employed: W. B. Keith, A. Oliver.

Capt. J. A. C. Macewan is restored to the establishment.

Capt. (acting Major) W. A. Brechin relinquishes his acting rank on ceasing to be specially employed.

Capt. F. W. Squair, from T.F.R., to be Captain.

Capt. D. P. M. Farquharson to be Major.

Lieut. (Temp. Capt.) J. V. Kinloch and Lieut. K. S. Beken to be Captains.

P. R. Fincher and R. G. MacGregor to be Lieutenants.

TERRITORIAL FORCE RESERVE.

Capt. E. G. Annis, from R.A.M.C., to be Captain.

ROYAL AIR FORCE: *Medical Branch.*

J. A. Giles is granted a temporary commission as Captain.

J. D. George and G. W. J. Bousfield are granted temporary commissions as Lieutenants.

THE governing body of Birkbeck College have appointed George Senter, D.Sc. Lond., to the office of Principal, recently vacated by Dr. George Armitage-Smith. Dr. Senter, who is well known for his research and writings in chemistry, formerly held the readership in chemistry at St. Mary's Hospital Medical School.

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. J. C. T. Teggart, R.A.M.C., attached R.F.A., was educated at Glasgow University, and qualified in 1912. After holding an appointment at the Western Infirmary, Glasgow, he practised at Delny, Ross-shire.
Capt. R. Jacobs, R.A.M.C.

Died.

Major H. Betham Robinson, R.A.M.C., surgeon to St. Thomas's Hospital, the East London Hospital, and King George Hospital. An obituary notice appears on p. 189.
Capt. A. B. Foott, R.A.M.C., was educated at Queen's College, Cork, and qualified in 1914, a few days prior to the outbreak of war. After holding an appointment at the Cork Eye, Ear, and Throat Hospital he joined up.

Died of Wounds.

Major J. D. Proud, M.C. and bar, R.A.M.C., was educated at Charterhouse and at Durham University, and qualified in June, 1915, forthwith joining up. The award of the M.C. and of the bar were recorded in THE LANCET respectively of June 23rd (p. 969), and of Oct. 6th (p. 549), 1917.

Wounded.

Capt. J. C. P. Bayley, R.A.M.C., attached Manchester Regt.
Lieut.-Col. W. C. Croly, D.S.O., R.A.M.C.
Capt. R. L. Williams, D.S.O., M.C., R.A.M.C., attached S. Staff. Regt.
Major G. B. Holroyde, R.A.M.C.
Capt. W. St. C. Maclure, R.A.M.C., attached R.E.
Capt. P. Ardagh, New Zealand M.C., attached Infantry.

Missing.

Lieut. J. R. McGregor, R.A.M.C.

Previously reported Missing, now reported Prisoners in German Hands.

Capt. T. Blackwood, R.A.M.C., attached R.F.A.
Lieut. F. W. M. Lamb, R.A.M.C.
Lieut. F. B. O'Dowd, R.A.M.C., attached West Yorks Regt.
Capt. R. W. Pearson, M.C., R.A.M.C., attd. Durham L.I.
Capt. A. B. Simpson, R.A.M.C.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Lieut. D. Moir, M.C., Cameron Highlanders, attached K.A.R., died of wounds, younger son of Lieut.-Col. J. M. Moir, R.A.M.C., of Inverness.
Major J. D. Proud, M.C. and bar, R.A.M.C., died of wounds, only son of Dr. F. Proud, medical officer of health for Maryport, Cumberland.
Lieut. C. E. W. Brewer, R.N., killed at sea, youngest son of the late Dr. R. E. W. Brewer, of Newport, Mon.

THE HONOURS LIST.

The following awards to medical officers are in continuation of those published in THE LANCET of August 3rd:—

The Military Cross.

Temp. Capt. EDWARD ARTHUR ALDRIDGE.—For conspicuous gallantry and devotion to duty at the dressing station, remaining until the enemy were upon him, and having cleared his aid-post, working his way back, collecting the wounded and attending to them under heavy shell fire. His courage and self-sacrifice set a splendid example, and were worthy of the highest praise.

Temp. Capt. WILLIAM BRODIE GURNEY ANGUS.—For conspicuous gallantry and devotion to duty during recent operations. He was the means of saving the lives of many officers and men, especially on one occasion when the brigade suffered severe casualties from shell fire. He was untiring in carrying out his duties and removing the wounded to a place of safety.

Capt. JOHN WEBSTER ARCHIBALD.—For conspicuous gallantry and devotion to duty during recent operations. The battery position of the brigade was subjected to an intense bombardment in connexion with the enemy attack, and although shell fire round his own headquarters was severe, he visited all the battery positions by himself, instead of having the casualties brought to him. His complete disregard for personal safety in order to save the wounded being brought through the enemy barrage undoubtedly resulted in the saving of life and of many casualties. His courage and cheerfulness under a heavy and continuous strain was of the greatest value, and a fine example to all.

Capt. (acting Major) CHARLES PHILIP BRENTNALL.—For conspicuous gallantry and devotion to duty during two days at an advanced collecting post under conditions of great danger. Although heavily shelled he succeeded in keeping his post clear and getting away all the wounded. The collection and evacuation of wounded was rendered particularly difficult owing to the fact that the troops were executing a withdrawal.

Capt. CHARLES HERBERT BUDD.—For conspicuous gallantry and devotion to duty in attending to wounded under fire. Under heavy shelling he went forward and dressed wounded, and dressed one man under full observation of the enemy.

Temp. Capt. GEORGE MILNE CAMERON.—For conspicuous gallantry and devotion to duty when in charge of bearers. He worked incessantly for 12 hours collecting and evacuating the wounded under heavy shell and machine-gun fire. Many cases were successfully got away, which, but for his determination and absolute disregard of danger, would have fallen into the hands of the enemy.

Capt. DAVID CAMPBELL.—For conspicuous gallantry and devotion to duty, when on two occasions he was the only M.O. left with the brigade. He organised regimental aid-posts and established lines of evacuation, and during a long exposure to shell and machine-gun fire set an inspiring example to all.

Temp. Capt. DUGALD STEWART CAMPBELL.—For conspicuous gallantry and devotion to duty. He worked without rest, and when it was necessary to retire successfully brought away all the wounded, in spite of the district being subjected to a heavy gas bombardment. He was undoubtedly the cause of saving the lives of many wounded.

Temp. Capt. THOMAS HAY CAMPBELL.—For conspicuous gallantry and devotion to duty. When under heavy shell and machine-gun fire he organised a forward aid-post and evacuated over 500 wounded. No wounded man was allowed to pass without personal attention, in spite of the difficulties of doing so in an exposed position.

Capt. LOUIS ABEL CELESTIN.—For conspicuous gallantry and devotion to duty. He remained with a party which was covering the retirement, and attended to the wounded under heavy rifle and machine-gun fire. Later he dressed a medical officer's wounds, and carried him single-handed for a distance of over half a mile through heavy fire when the officer he was carrying died of wounds.

Temp. Capt. RICHARD COLLIER COATSWORTH.—For conspicuous gallantry and devotion to duty during an enemy attack. He early led his regimental stretcher-bearers through very heavy shell fire to remove all wounded that could be found. He organised the removal of wounded, and by his perpetual cheerfulness and coolness set a fine example to his men, and effected the successful evacuation of many wounded.

Temp. Capt. ALAN GIBB COOK.—For conspicuous gallantry and devotion to duty while clearing wounded under heavy machine-gun and shell fire during an enemy attack. When the officer in charge of the bearers became a casualty he carried on the evacuation of the wounded, though badly gassed himself. He frequently led squads to the front line in search of wounded and showed great disregard of danger.

Temp. Capt. WILLIAM FRANCIS CORNWALL.—For conspicuous gallantry and devotion to duty. When the enemy carried out a heavy bombardment with large calibre shells and gas he established on his own initiative a dressing station and continued to deal with cases of various units for five hours, during which time the shelling was intense. To evacuate the wounded he organised stretcher parties of prisoners, no other means being at the time available.

Temp. Capt. JAMES ROBERT CRAIG.—For conspicuous gallantry and devotion to duty. He kept in touch with the retiring troops, evacuating the wounded without relief for eight days and nights. While the advanced dressing station was under heavy fire and all the other officers had been either killed or wounded he continued to carry on his work.

Temp. Lieut. GWILYM CHARLES MONTAGUE DAVIES.—For conspicuous gallantry and devotion to duty. When a neighbouring village was being heavily shelled, he went there to see if he could help. Finding that the field ambulance had withdrawn, he re-opened the dressing station and remained there for hours, managing to evacuate a large number of wounded.

Temp. Capt. LLYWELYN AP IVAN DAVIES.—For conspicuous gallantry and devotion to duty when, all the R.A.M.C. in an area having been taken by the enemy, he was sent up to establish a system of evacuation. In spite of heavy shelling he kept his cars and bearers working for 24 hours, only retiring when the infantry passed him, and by so doing prevented many of the wounded from falling into the hands of the enemy.

Temp. Capt. EDWARD FORBES.—For conspicuous gallantry and devotion to duty. While the battalion was preparing to march off 3 officers and 13 men were wounded; this officer attended to them all under heavy fire. Later he was wounded while attending to his duties.

Temp. Capt. (acting Major) CHARLES COLDER FORSYTH.—For conspicuous gallantry and devotion to duty. Hearing that help was urgently required at a certain point, he organised stretcher-bearers to clear away the wounded, of which there were over 200. He remained in the area, which was heavily shelled, during the whole afternoon and until all the wounded had been evacuated. His spendid courage and initiative in organising this evacuation undoubtedly saved the lives of many of the wounded, who would otherwise have perished.

Capt. CHARLES WAINWRIGHT FORT.—For conspicuous gallantry and devotion to duty during several days when acting as bearer officer. The conditions under which the wounded had to be collected and evacuated were particularly difficult, owing to the fact that the troops were executing a withdrawal. By his total disregard of danger and initiative in bringing forward his bearers, often under heavy shell fire, he succeeded in clearing large numbers of the wounded.

Capt. FREDERICK GAMM, Spec. Res.—For conspicuous gallantry and devotion to duty for several days when in charge of an advanced dressing station, and until it was almost surrounded by the enemy. During this time, although under a continuous and heavy bombardment, he continued to dress casualties and organise stretcher squads, which he took out to search for wounded. By his courageous action many wounded were collected and evacuated, and his splendid example was a fine stimulus to all.

Temp. Capt. DAVID GILLESPIE.—For conspicuous gallantry and devotion to duty. During recent operations he did most useful work in tending wounded and arranging for their removal under fire. The work was often done under heavy machine-gun fire at medium range. His coolness and fine example greatly contributed to successful evacuation being carried out.

Temp. Capt. MORLEY EDWARD GORMAN.—For conspicuous gallantry and devotion to duty in carrying on his work when the dressing station was destroyed by shell fire and in visiting his posts and superintending the evacuation of the wounded under heavy shell fire. Throughout the operations he displayed the utmost coolness and contempt of danger; his cheery optimism and energetic personal example inspired confidence in all.

Temp. Capt. (acting Major) HOWARD BOYD GRAHAM, D.S.O.—For conspicuous gallantry and devotion to duty while in charge of over 300 bearers, always under heavy shell fire and often under machine-gun fire at close range. It was due to his judgment that the wounded were evacuated with a minimum possible loss in personnel. On one occasion, being cut off by the enemy, he led his party to safety by a wide detour. When his dressing station was heavily shelled, with the infliction of heavy casualties, he organised the rescue work, rallied the shaken bearers, selected the line of evacuation, and, with the aid of another officer, evacuated 54 casualties to a place of safety. His conduct through this fiery ordeal was magnificent.

Temp. Capt. EDWARD WILLIAM DACRE HARDY.—For conspicuous gallantry and devotion to duty. His dressing station was situated at cross roads, the only place available, and during a whole day was obviously a target for exceptionally intense bombardment. He displayed the greatest courage and supreme contempt of danger, remaining at his post and dressing wounded the entire day while everybody else was dug in.

Temp. Capt. GEORGE FRANCIS PALMER HEATHCOTE.—For conspicuous gallantry and devotion to duty throughout many days of active operations. He was absolutely tireless in his work of rescuing and caring for the wounded, and freely exposed himself to heavy rifle and machine-gun fire in carrying out his duties. By his splendid courage and energy throughout the whole operations he was instrumental in getting away most of the wounded.

Temp. Lieut. ROBERT JOHN HELSBY.—For conspicuous gallantry and devotion to duty when, the battery area being heavily shelled, he dressed the wounded with complete disregard of personal safety, and in spite of being blown up in a house and badly shaken.

Temp. Capt. FRANCIS HENDERSON.—For conspicuous gallantry and devotion to duty. Throughout ten days' fighting this officer set a splendid example. On one day for 12 consecutive hours he was engaged in leading squads of bearers to and from the regimental aid-posts. He frequently dressed men in the open when their condition needed it. He brought a wounded officer back in a car, several times stopping it under heavy fire to make the officer more comfortable.

Capt. (acting Major) HOWARD HENRY.—For conspicuous gallantry and devotion to duty during several days when acting as bearer officer. The conditions under which the wounded had to be collected and evacuated were particularly difficult, owing to the fact that the troops were executing a withdrawal. By his total disregard of personal danger and coolness, he set a brilliant example to the bearers under his command, and undoubtedly was the means of saving many lives.

Capt. ROBERT ALEXANDER HEPPLE, Spec. Res.—For conspicuous gallantry and devotion to duty. The advanced dressing station was hit by three shells simultaneously, when the building was demolished and several men killed or wounded. He at once set to work to recover the wounded from under the débris, and did not leave till all had been cleared, in spite of the continued intense shelling of the vicinity.

Temp. Capt. STEWART HODGSON.—For conspicuous gallantry and devotion to duty during recent operations. For a whole day, often under direct rifle and machine-gun fire, he attended the wounded and directed their evacuation. Although wounded he continued his duties with exceptional coolness and skill, until the advancing enemy compelled withdrawal.

Temp. Capt. HUGH LLEWELLYN GLYN HUGHES, D.S.O.—For conspicuous gallantry and devotion to duty. He worked day and night in the open, in spite of the heaviest shell and machine-gun fire, tending the wounded and helping them back to safety, with a spirit of cheerfulness and self-sacrifice rarely seen. After being wounded he still continued to perform his duties, until the wound necessitated his evacuation.

Temp. Capt. THOMAS WILLIAM JACKSON.—For conspicuous gallantry and devotion to duty during an enemy attack. He was with two other medical officers in a dressing station when the troops in front fell back. The dressing station was full of wounded, and this officer continued, with the two others, to tend the wounded, despite the close proximity of the enemy, till, thanks to a counter-attack by our troops, every case was cleared. This was a fine act of courage and devotion to duty.

Temp. Capt. GEORGE WILLIAM BLOMFIELD JAMES.—For conspicuous gallantry and devotion to duty throughout a retirement in remaining behind with the rearguard, dressing and evacuating wounded under very heavy fire, until his medical stores were exhausted and he was in danger of being cut off. It was due to his tireless energy that so few wounded fell into the hands of the enemy. His resource and cheerfulness throughout were a real encouragement to all.

Capt. ARTHUR MORRELL JOHNSON.—For conspicuous gallantry and devotion to duty in tending and evacuating the wounded in the front line and under continual fire. When the order to withdraw was issued he remained till the last, and it was entirely due to his courage and energy that all the wounded were cleared.

Temp. Capt. FRANCIS ESMOND KEANE.—For conspicuous gallantry and devotion to duty. Throughout the operations he displayed the greatest courage and grit, working unceasingly without sleep, establishing aid-posts, and evacuating wounded under heavy shell and machine-gun fire. His services to the battalion were most invaluable.

Temp. Capt. RICHARD KENEFICK.—For conspicuous gallantry and devotion to duty. While the regiment was consolidating its position, he attended to the wounded quite in the open and under very heavy fire, and arranged for their evacuation. He undoubtedly saved many lives which would otherwise have been lost. He was wounded in the foot, but did not relax his energy, and continued to attend to all the wounded in the vicinity.

Capt. JOSEPH ILLINGWORTH LAWSON, Spec. Res.—For conspicuous gallantry and devotion to duty in bringing in wounded under heavy shell fire, with no one between him and the enemy, thereby saving them from being made prisoners.

Temp. Capt. GEORGE AUSTEN LILLY.—For conspicuous gallantry and devotion to duty. In order to attend the wounded he frequently crossed an exposed piece of ground 300 yards in length. Later, when the horses had to be moved owing to heavy shelling, he rescued a badly wounded man, carrying him to safety.

Capt. HENRY GUY LUDOLF.—For conspicuous gallantry and devotion to duty. For six days he worked under continuous fire, and during the last two days was the only doctor on the spot attending to the wounded of five different battalions. He was himself suffering from a severe attack of neuritis, but stuck to his work till assistance came. During these six days his personal heroism and abnegation of self were beyond all praise, and owing to his gallant conduct the lives of many were saved.

Capt. JOHN ALEXANDER MACKENZIE, Spec. Res.—For conspicuous gallantry and devotion to duty at an advanced dressing station, under heavy shell fire, during an enemy attack. He persisted in his work, and successfully evacuated all the wounded before withdrawing his personnel. At another advanced dressing station later he stuck to his duty for 72 hours without rest.

Capt. KENNETH AHTHUR McLEAN, Australian A.M.C.—For conspicuous gallantry and devotion to duty during a heavy enemy attack. Under heavy fire he personally conducted bearer squads, organised the forward work of evacuation, and exerted himself to the utmost in saving wounded. His fine example served to keep the men under him working at high pressure, and ensured the complete evacuation of the positions.

Temp. Capt. ALAN COWAN MANN.—For conspicuous gallantry and devotion to duty. Throughout eight days' operations this officer did fine work in tending and clearing the wounded. On one occasion, when the line fell back, he remained with the wounded and succeeded in clearing all that could be found before he withdrew. The splendid work done by the stretcher-bearers was due to this officer's organisation and leading.

Temp. Capt. HARRY GODFREY MASSY-MILES.—For conspicuous gallantry and devotion during several days of severe fighting, when he kept in close touch with the battalion, working unceasingly, without rest, during the whole period, dressing the wounded, including the French. He showed great initiative in establishing forward R.A.P.'s, reconnoitring their sites beforehand under heavy hostile shell fire, thus greatly assisting the rapid evacuation of casualties. His courage and cheerfulness throughout a period of great strain were beyond praise.

Temp. Capt. WILLIAM GRAEME DENROCHE McCALL.—For conspicuous gallantry and devotion to duty when at a forward collecting post. During an afternoon large numbers of wounded had to be dealt with, and the approaches to the station were subjected to intense shell and machine-gun fire. He maintained the position for many hours, dressing and evacuating all wounded, though later he was in imminent danger of being surrounded. When the post was quite untenable he successfully withdrew all personnel and stores. His gallantry under conditions of extreme danger saved many lives.

Temp. Capt. ROGER McGRATH.—For conspicuous gallantry and devotion to duty when in charge of the bearers of his field ambulance. During the enemy's advance, and while exposed to heavy shell and machine-gun fire, he organised his bearers and evacuated many wounded, who otherwise would have been captured. He set a fine example of energy and courage.

Temp. Capt. ALEXANDER CHURCH BRODIE McMURTRIE.—For conspicuous gallantry and devotion to duty. On several occasions he brought in wounded himself under shell fire, and by his disregard of danger set a fine example to those under him. Owing to his arrangements and untiring efforts many lives were saved.

Capt. HAMILTON STEPHEN MOORE, Spec. Res.—For conspicuous gallantry and devotion to duty in constantly leading stretcher parties through intense shell and machine-gun fire, in order to evacuate the wounded. On one occasion the whole party except himself became casualties. He dressed his men in the open, and invariably stayed till all had been got away. His cool and determined gallantry was a great inspiration to all the men working under him, and his efforts saved many wounded from being captured.

Capt. FREDERICK CECIL NICHOLS.—For conspicuous gallantry and devotion to duty. When the front line was forced back he maintained his dressing station in the newly-formed front line until he had attended to every case, in spite of a heavy bombardment. Throughout the four days' fighting he displayed untiring energy and great personal courage.

Temp. Capt. ALGER ROY ORAM.—For conspicuous gallantry and devotion to duty. In recent operations this officer, under very heavy shell fire, continued to attend to the wounded and evacuate cases under the most adverse circumstances. On several occasions, by his fine example and personal courage, he saved many wounded who otherwise would have fallen into the enemy's hands.

Temp. Capt. JOHN LINDESAY PEARCE.—For conspicuous gallantry and devotion to duty while in charge of a bearer post. He repeatedly led squads of bearers to parts of the line where wounded were collected, and it was due to his fine example that so many wounded were saved during a period when communication with the front was extremely difficult. He showed courage under shell fire and was indefatigable in his duties.

Capt. ALLAN CAMPBELL PEARSON.—For conspicuous gallantry and devotion to duty when acting as second in command of a casualty clearing station. On several occasions and on different days he superintended the evacuation of wounded under heavy shell fire, and also, with the greatest courage and ability, supervised the salving of equipment during bombing and machine-gun fire from hostile aircraft.

Temp. Lieut. ROLAND WILFRED PEARSON.—For conspicuous gallantry and devotion to duty in the performance of his duties during lengthy operations. On one occasion two direct hits were obtained on his post, and a patient, who was being dressed, was killed. On another day he followed the battalion in a counter-attack, and rendered the most magnificent services to the wounded, under heavy machine-gun fire. By his courage, fine example, and great devotion he has at all times inspired his stretcher-bearers, and it was mainly due to him that so many of the wounded were got away by the bearers.

Temp. Capt. JAMES POTTER.—For conspicuous gallantry and devotion during lengthy operations, when he continuously attended the wounded under heavy shell, machine-gun, and rifle fire, maintaining his regimental aid-post until the enemy had nearly reached it. His splendid example of courage and devotion to duty were beyond praise.

Capt. (acting Major) WILLIAM JAMES PURVES.—For conspicuous gallantry and devotion to duty at a main dressing station, when by his courage, untiring energy, and grasp of the situation over 1000 wounded were passed through the station without a hitch, and when, owing to continuous shelling, he had to retire all cases were got safely away. This was especially difficult, as the troops were executing a withdrawal.

Capt. JOHN WOOTTON RAMMELL.—For conspicuous gallantry and devotion to duty in dressing the wounded and carrying out his duties under heavy rifle and machine-gun fire. Owing to his ceaseless endeavour and skill all the wounded were evacuated. All ranks speak with admiration of his courage and good work.

Temp. Capt. JOHN KING RENNIE.—For conspicuous gallantry and devotion to duty when, an advanced dressing station having retired, he organised another in a village, which he only left when the enemy entered it, working all the time under a heavy fire. Subsequently he again organised the evacuation of the wounded under difficult conditions, and saved many from falling into the hands of the enemy.

Capt. HENRY WHITTERON ROBINSON.—For conspicuous gallantry and devotion to duty. In spite of continuous shell fire, during which his aid-post sustained two direct hits, this officer worked without ceasing, giving unremitting attention to the wounded and organising bearer squads.

Capt. PETER JOHN RYAN.—For conspicuous gallantry and devotion to duty during lengthy operations in charge of bearers and advanced dressing stations. He organised the whole forward work, and it was due to his individual efforts and energy that so large a number of casualties were prevented from falling into hostile hands. He worked continuously throughout the whole retreat, and his success was such that no wounded man fell into the enemy's hands after once having been put under the care of the field ambulance bearers. His work was carried out under extremely difficult conditions, and often under heavy shell fire. His devotion to duty was quite beyond praise.

Temp. Capt. CUTHBERT SCALES.—For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers. He collected and evacuated many wounded under heavy fire, and remained at his post until forced by the advance of the enemy to withdraw his collecting post further back. There he continued collecting and evacuating as long as possible, showing a fine example to his men.

Capt. HUBERT SHIELD.—For conspicuous gallantry and devotion to duty at advanced dressing stations. Under heavy fire, he managed to save all wounded from falling into the enemy's hands, and remained doing his duty till his stations were cleared. In one dressing station, which he alone ran for 16 hours, he dressed and evacuated over 300 men.

Capt. WILLIAM SMITH, South African M.C.—For conspicuous gallantry and devotion to duty during active operations. He displayed great courage in carrying on his duties after being blown up by a shell, which wounded him and killed two of his orderlies, and he remained at duty until his battalion was relieved.

Capt. THOMAS COPELAND STOREY, Spec. Res.—For conspicuous allantr y and devotion to duty. After the withdrawal from a wood, it was discovered that some of the wounded had been left behind. He went forward and spent an hour and a half in front of the line, searching the wood, and brought them all back, in spite of considerable hostile fire. Otherwise they would undoubtedly have fallen into the hands of the enemy.

Temp. Capt. RAYMOND BREWITT TAYLOR.—For conspicuous gallantry and devotion to duty. He searched for a missing stretcher-bearer for two hours under heavy shell fire, at last finding him in a shell-hole and assisting to carry him back. Throughout nine days' fighting he was constantly going forward, under fire, searching for and bringing in wounded.

Capt. WILLIAM WALKER, Spec. Res.—For conspicuous gallantry and devotion to duty. He proceeded to a village under heavy fire and succeeded in attending and evacuating several wounded. He only desisted when the enemy entered the village. Later, he succeeded in releasing a party of stretcher-bearers who had been cut off. Throughout the operations he has shown the utmost energy and courage.

Capt. CHARLES ERIC WATSON, Australian A.M.C.—For conspicuous gallantry and devotion to duty. Under very heavy artillery fire he continued to dress the wounded for two hours and a half. Though many of the bearers were killed and wounded, he stayed with the stretcher cases, and it was owing to his fine courage and energy that many of the wounded were saved.

Capt. HARRY ERNEST BANTRY WHITE, Spec. Res.—For conspicuous gallantry and devotion to duty during recent operations. He was medical officer attached to the battalion, and for eight days he worked continuously without rest and often without food, generally under heavy fire, attending to the wounded. His efforts were tireless, and his courage and devotion to duty were the means of saving many lives.

Temp. Capt. DAVID ROBERTS WILLIAMS.—For conspicuous gallantry and devotion to duty while in charge of bearers in evacuating wounded. On one occasion, going back and searching for wounded when, in spite of darkness, barbed wire, and torn-up ground, he brought away two men from an abandoned aid-post, carrying one on his back. On another occasion it was largely due to his determination and grit that a camp which was being heavily shelled was evacuated of all wounded, when he remained till the last and saw that all was clear.

Temp. Capt. CHARLES EDGAR WILSON.*—For conspicuous gallantry and devotion to duty when, during a rearguard action, he worked untiringly in the interests of the wounded, who all were safely evacuated in spite of having to pass over a long stretch of open ground exposed to fire. Through all this trying time he was cool and cheerful, showing a complete disregard of personal danger.

Capt. HENRY WILSON.—For conspicuous gallantry and devotion to duty. For five days, under all kinds of enemy fire, he showed an utter contempt of danger and disregard of self. His energy and splendid behaviour undoubtedly saved many lives, and through his powers of organisation no wounded were left behind when the battalion was relieved from the line.

* Since deceased. See Obituary, THE LANCET, May 4th, p. 653.

The following awards to, and promotions of, medical officers are in connexion with operations in East Africa :—

C.M.G.—Col. G. W. Tate, D.S.O., A.M.S.; Lt.-Col. R. G. Turner, D.S.O., I.M.S.

To be Brevet Lieutenant-Colonel.—Maj. (temp. Lt.-Col.) W. Benson, D.S.O., R.A.M.C.

Distinguished Service Order.—Lt.-Col. A. C. Adderley, R.A.M.C.; Temp. Maj. (acting Lt.-Col.) T. M. R. Leonard, Spec. List, West African Medical Service; Capt. (acting Maj.) A. McW. Green, South African, M.C.

Military Cross.—Capt. F. M. Barnes, R.A.M.C., Spec. Res.; Capt. H. D. Brown, R.A.M.C., Spec. Res.; Lt. N. S. Bruce, R.A.M.C., Spec. Res.; Temp. Lt. G. Burnet, R.A.M.C.; Capt. H. A. Crouch, R.A.M.C., Spec. Res.; Temp. Capt. M. C. Gardner, R.A.M.C.; Temp. Capt. E. Gibson, Spec. List, West African Med. Serv.; Capt. J. B. Lapsley, I.M.S.; Capt. G. S. Lawrence, R.A.M.C., Spec. Res.; Temp. Capt. T. H. Massey, East African Med. Serv.; Temp. Capt. H. R. Morehead, Spec. List, West African Med. Serv.; Temp. Capt. T. R. Sandeman, Spec. List, West African Med. Serv.; Capt. R. R. Scott, R.A.M.C., Spec. Res.; Capt. A. F. Wallace, Northern Rhodesia Med. Serv.

GALLANTRY AT SEA.—Surgeon E. A. Fiddian, R.N., has been awarded the bronze medal for gallantry in saving life at sea for assisting in the rescue of a shipwrecked British crew last January in the White Sea.

THE RED CROSS WAR HOSPITALS.—The annual report on the accounts of Auxiliary Hospitals in the British Isles for the year 1917 is a document which should prove of considerable value to all concerned in the control and support of those institutions, for the comparison of the working and expenditure between individual hospitals must lead to economy of administration. The report calls attention to the improvement in organisation, gives in detail the accounts, the number of patients treated indoors and outdoors, the cost of maintenance, and so forth. The number of hospitals dealt with is 1073, as compared with 960 in the report for 1916 and 753 in that for 1915. The average cost of maintenance per in-patient per day in 1917 was slightly in excess of 3*s.* 7*d.*, the average total cost of each in-patient for treatment being £7 3*s.* 5*d.* The total expenditure of the hospitals during the year was £3,466,892, as compared with £2,142,182 in 1916 and £1,023,937 in 1915. The total cost of maintenance was £3,144,362, the figures for 1916 being £1,937,221 and for 1915 £891,342. The total cost of administration for 1917 was £19,930. The report can be obtained from Room 46, 83, Pall Mall, London, S.W. 1, price 3*s.*

URBAN VITAL STATISTICS.

(Week ended August 3rd, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 12·1, against 18·1 and 13·1 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 11·4, or 0·4 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 3·0 in Cambridge, 5·1 in Swindon, and 5·8 in Wimbledon, to 20·2 in Exeter, 20·6 in Sunderland, and 31·5 in Aberdare. The principal epidemic diseases caused 255 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 74 from infantile diarrhœa, 66 from measles, 63 from whooping-cough, 39 from diphtheria, 11 from scarlet fever, and 4 from enteric fever. The deaths from whooping-cough were the lowest recorded in any week of the current year; the deaths from measles and diphtheria showed a slight increase over the numbers recorded in the previous week. The 766 cases of scarlet fever and 927 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 21 and 34 below the respective numbers remaining at the end of the previous week. The 878 deaths from all causes in London included 38 from influenza, against 287, 192, and 86 in the three preceding weeks. The causes of 31 deaths in the 96 towns were uncertified, and included 5 in Liverpool.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 13·1, against 17·4 and 14·2 per 1000 in the two preceding weeks. The 280 deaths in Glasgow corresponded to an annual rate of 13·1 per 1000, and included 13 from infantile diarrhœa, 6 from whooping-cough, 5 from diphtheria, 3 from measles, and 1 each from enteric fever and scarlet fever. The 79 deaths in Edinburgh were equal to a rate of 12·4 per 1000, and included 1 each from whooping-cough and from infantile diarrhœa.

Irish Towns.—The 122 deaths in Dublin corresponded to an annual rate of 15·9, or 4·1 below that recorded in the previous week, and included 2 from infantile diarrhœa, and 1 each from enteric fever and measles. The 113 deaths in Belfast were equal to an annual rate of 15·0 per 1000, and included 7 from infantile diarrhœa and 2 from whooping-cough.

DONATIONS AND BEQUESTS.—The late Mrs. Elizabeth Tupper has left among other bequests £3000 each to the Cancer Hospital, the Hospital for Consumption and Diseases of the Chest, Brompton, St. Mary's Hospital, and Middlesex Hospital; £2000 each to University College Hospital, Gower street, the Royal Hospital for Incurables, Putney, Royal Naval Benevolent Society, Guy's Hospital, the Samaritan Free Hospital for Women and Children, Seamen's Hospital Society, the National Hospital for the Paralysed and Epileptic, and the London Hospital; £1000 each to the Society for the Prevention of Cruelty to Children, the Infant Orphan Asylum, Wanstead, the Royal London Ophthalmic Hospital, and the Earlswood Asylum for Idiots; and £500 to the Society for the Prevention of Cruelty to Animals.—By the will of the late Mr. Gunner Henry Patteson Strong the testator bequeathed £1000 to Guy's Hospital to endow a bed and £300 to the Dunster Cottage Hospital, Somerset.

Obituary.

FREDERICK THOMAS ROBERTS, M.D., F.R.C.P. LOND., D.Sc. UNIVERSITY OF WALES,

CONSULTING PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL AND THE BROMPTON HOSPITAL FOR DISEASES OF THE CHEST.

WE announced last week the death of Dr. Frederick Roberts in his seventy-ninth year, who for a long period was one of the best known physicians in London, alike for his scientific opinions and as a teacher and an author. A Welshman by birth, he commenced his medical career by entering the Medical College at Liverpool, whence he proceeded to University College, London, joining the medical school. In the examination for the medical degree he was gold medallist in anatomy and physiology in 1860, became M.R.C.S. Eng. in 1861, B.Sc. Lond. in 1862, and graduated in medicine the following year.

After holding for a brief space of time the appointment of assistant physician to the Liverpool Northern Hospital, he returned, as was inevitable with his excellent student record, to University College, London, and in 1870, in which year he took the M.R.C.P. and the M.D. Lond., was appointed demonstrator of anatomy. The appointment marked the beginning of a great change in the system of medical instruction in the school. The system of teaching by "demonstrations" had begun to make its way elsewhere, but had not been adopted at University College. There were no demonstrations. There were, indeed, two demonstrators of anatomy who looked into the dissecting-room for a couple of hours every day. But that was all. The students had their lectures and their books, and they really did dissect; but for the most part they had to work out their own salvation with their own brains and discussions amongst themselves. The plan was a good one at bottom, but superior direction was lacking. Roberts came from Liverpool a fresh young man and full of energy, having lectured on almost every subject in the medical curriculum, his mind stored with an infinite variety of facts which were easily accessible and carefully arranged with all the method of a card-index. He at once started in the dissecting-room some excellent demonstrations on the convolutions of the brain, an innovation, as some of those who had almost finished their anatomy thought, and they proudly, perhaps conceitedly, held aloof from them. But Roberts's example was quickly followed in other departments, and demonstrational instruction and revision classes (and what are popularly known as "grinds") soon became as common at University College as everywhere else.

Roberts was a first-rate teacher of anatomy, as he soon had the opportunity of showing, for the professor, George Viner Ellis, fell ill, and the task of giving the set anatomical lectures devolved on his junior for a considerable time. It was not long before he joined the hospital staff as assistant physician, and those who had attended his anatomical lectures and demonstrations, and afterwards followed him in the out-patient room and the wards, could not fail to observe that his clinical and systematic lectures were arranged upon the familiar pattern. With him everything naturally fell into the tabular form—history, etiology, pathology, diagnosis, and treatment; and, though the students sometimes made fun of it, they found it an invaluable help in arranging their own ideas, not only for permanent use, but for the more transient requirements of the examination-room. His lists of the causes of any particular physical sign or symptom were most carefully prepared, and looking back it is interesting to remember how often "bad teeth" took almost as prominent a place as "pyorrhœa" takes to-day.

In 1877 Roberts became F.R.C.P. Lond. and in the following year full physician to the hospital. In his visits in the wards it was Roberts's special delight to demonstrate to his class the methods of percussion and auscultation, and Sir William Jenner used to refer students to him to learn how to percuss a chest. No little amusement was often elicited in comparing his light, fully-trained touch with the heavy, almost rib-breaking efforts of the new clinical clerk. In his appreciation of slight variations in the percussion note and the quality of cardiac murmurs his accurate musical ear stood him in good stead. It is always well that in a medical school different methods of clinical teaching should be represented, and this was strikingly the case at University College Hospital when Roberts first took charge of wards, with Wilson Fox, Ringer, and Bastian as his senior colleagues. His clinics were always crowded, and in addition to his sound and clear teaching there was a natural *bonhomie* about him which captivated the students and was better than a dose of medicine for the patients, who looked forward to his visit like a tonic. In remembering Roberts as a teacher, not a few will call to mind his course of lectures as Professor of Materia Medica. The subject as then taught was at the best not an exhilarating one, but somehow Roberts succeeded in making it attractive to a large and attentive class, and there must be many who, carrying their memories back to the early eighties, will recall the carefully prepared definitions of the various groups of therapeutic agents, among which that mysterious group, the "alteratives," must have proved particularly difficult for the lecturer to put in its right place. It was almost a matter of course that Roberts should write a handbook of medicine; and a very successful venture it was. Its title was the "Theory and Practice of Medicine." It passed through many editions and grew into a huge volume. As we turn its pages we find again, as in his anatomical and clinical teaching, everything falling into its proper pigeon-hole with charming accuracy and precision.

Thinking of all these things, and of how good a physician he was, and how large his public—for it must be remembered that he was also physician to the Brompton Hospital—one wonders how it was that Roberts did not secure one of the first consulting practices in London. It is impossible to specify the exact combination of qualities that lead up to complete success. Not that Roberts failed in this respect. He was busy enough. But he often spoke of his practice with some disappointment, and said that he would have done much better if he had gone on the operatic stage, till sometimes the thought arose whether his great reputation as a singer might have interfered with his reputation as a physician. Be that as it may, he certainly had the musical gifts of his race developed to the highest degree and an incomparable tenor voice, and a manner and style that made the trivial words of a light song go to your very heart. It was a voice without an edge, and till he was quite an old man Roberts's songs were always looked forward to and encored at Brompton dinners, at the annual University College festivals, and in his own house in Harley-street, where the music room was a shrine, and where the generous repast was always followed by a musical treat of the highest order.

Dr. Sidney Martin writes:—

Frederick Roberts was appointed assistant physician to University College Hospital at a time near the end of William Jenner's great career as pioneer in medicine and clinical teacher in the medical school. He was a pupil of Jenner, and was, like all others who came under his influence, profoundly affected by his teaching and personality. Roberts soon obtained a definite position in the medical school as the result of his industry and clinical teaching. He was not an original worker or thinker; but his mind was very methodical and his definition clear, so that his clinical demonstrations were highly appreciated, more particularly by the junior students. There were, indeed, some who were inclined to belittle his method of teaching, which perhaps classified the symptoms of disease in too methodical a manner. But there is no question that his method was of great value to many who were beginning the study of medicine at the bedside. His systematic lectures were always clear expositions of the subject. For some years he lectured in the particularly dull subject of materia medica with success. His lectures in medicine did not, like those given by Russell Reynolds and Ringer, deal with pictures of disease, but consisted in a categorical statement of the symptoms of particular disease; a method useful, indeed, for examinations, but not sufficiently stimulating, perhaps, for the thinking student. During the whole of his career at the staff of the hospital Frederick Roberts maintained his energy in teaching; he was always ready to help the student, and thus became a most important member of the medical school. Numerous are the practitioners of medicine who are grateful to him for his clear exposition of the symptoms of disease.

Roberts's active career in the medical school was at a period before the development of bacteriology, so that he was not in touch with the recent developments of medicine. If anything he belonged to the school of Walsh, which spent itself in the minute examination of the physical signs of

disease. This is a useful aspect of clinical medicine, but its too exclusive study is apt to obscure a wide view of the study of disease. As a colleague Roberts was delightful and loyal to his colleagues, to the school, and upright in all his dealing. There was no better friend to have, and his beautiful singing will remain in the hearts of his friends for all time.

Dr. Walter Carr writes:—

Among the many distinguished members of the medical staff of University College Hospital during the last quarter of the nineteenth century Dr. F. T. Roberts was in several respects an out-standing figure. His imposing personal appearance, his unfailing *bonhomie*, the special characteristics of his teaching, his many acts of personal kindness, his magnificent and well-trained voice, all combined to make him exceptionally popular with successive generations of students. Who can forget the way in which he would stride into his ward and, standing by the bedside of a patient, commence a clinical lecture on the causes of some particular symptom—"Firstly, nothing at all; secondly, bad teeth; thirdly ....," and so on, until every likely or unlikely cause had been discussed. Classification was of the essence of his teaching alike in the wards, in his systematic lectures on therapeutics, and in his well-known text-book on Medicine. Possibly the method was carried too far, as it tended to attach equal importance to frequent and to rare causes of disease, to common and to exceptional symptoms, to all-important and to comparatively valueless drugs; nevertheless, it served to make us thorough in the investigation of cases and to diminish the risk of our overlooking or forgetting less important causes or symptoms. Incidentally it was most valuable for the immediate purpose of helping us to pass examinations.

In some respects Roberts was in advance of his time. He impressed upon us the importance of the teeth at a period when they were only too frequently entirely disregarded and when pyorrhœa was as little thought of as were adenoids. He often foretold that a day would come when diseases of the pancreas would figure far more prominently in medicine than was then the case. Perhaps he was at his best when passing comparatively quickly from bed to bed he would make a few pertinent remarks on the salient features of each case. From his special experience at the Brompton Hospital, aided doubtless by his fine ear for sound, he was naturally particularly interested in lung diseases, and his pupils are never likely to forget the importance he very rightly attached to pleural adhesions and, above all, to "mixed morbid conditions in the chest." Only a few years ago the writer of these notes published a clinical lecture on this subject in one of the medical journals, in which he referred to his indebtedness to his old teacher. A few days later he received a characteristically kindly letter of thanks from Roberts, in which he said how often others had appropriated his teaching without any acknowledgment whatever.

The amount of work which Roberts got through, apparently without undue strain or effort, must have been enormous. In addition to a large private practice, he was regular in his attendance and teaching at two important hospitals; he was constantly bringing out a new edition of his popular book on medicine, not to mention a good deal of other literary work; he was a very active Fellow of the Medical Society of London, finally becoming President; and he seemed positively to revel in examinerships, of which he held a remarkable number. Nevertheless, he found time also for an unusual amount of social life, and no account of him would be complete without a reference to his quite exceptionally fine tenor voice, which fully maintained the traditional reputation of his native country—Wales—as a home of song.

Roberts retired from the active staff of University College Hospital in 1905, and his closing years were a period of enforced quietude and retirement, pathetic by contrast with the strenuous activities which have been set out above. He was a great figure in medical education during the last quarter of the nineteenth century.

HENRY BETHAM ROBINSON, M.D., M.S. LOND., F.R.C.S. ENG.,

SENIOR SURGEON TO ST. THOMAS'S HOSPITAL; SURGEON TO KING GEORGE HOSPITAL; MAJOR, R.A.M.C.(T.).

WE recorded last week the death on July 31st, in his 58th year, of Mr. H. B. Robinson, senior surgeon to St. Thomas's Hospital, and lecturer on surgery in the Medical School.

Henry Betham Robinson was born in August, 1860, received his school education at Dulwich College, and entered the medical school of St. Thomas's Hospital, London, where he won many distinctions, amongst them the scholarship and gold medal in medicine at the London M.B. examination (1885) and the gold medal for the B.S. In 1887 he became a Fellow of the Royal College of Surgeons of England, and was appointed Hunterian Professor in 1893, giving a course of lectures on Cystic Diseases of the Breast. In the same year he was elected on the surgical staff of his hospital, ascending the scale until at the time of his death he was senior surgeon on the acting staff, as well as consulting surgeon to two children's hospitals in the East End. His services as a teacher were largely in demand. He was the last surgeon on the staff to give lectures on anatomy at his medical school, and until his death he held the lectureship on surgery, the entire systematic course falling on him during the winter months owing to the absence of a colleague. For many years he was examiner in surgery at the Universities of London and Manchester. As surgeon at St. Thomas's Hospital he held a Territorial commission, and in August, 1914, he was called up and attached as *à la suite* officer to the Second London General Hospital. Soon after he accepted a similar appointment at the newly opened King George Hospital, and in 1915, when the military side of St. Thomas's became No. 5 London General Hospital, he took charge of beds there as well. Thus for three years he worked incessantly at three military hospitals as well as his civil ones, and only during the last few months was he relieved of beds at the first named. These exhausting years, in which his energies never seemed to flag, contributed doubtless to his early breakdown.

As a surgeon Mr. Robinson was notable for the thoroughness of his methods, combined with a quickness which was never practised at the expense of the patient. He was an excellent diagnostician, particularly in abdominal affections. For some years he was in charge of the throat department at St. Thomas's Hospital, after he had left it retaining both his skill and interest in that line of work. As a teacher he was an unfailing attraction to the students. He had a good delivery, formed clear opinions, and enunciated them in well-chosen but simple language. A factor in his success was the evident enjoyment that teaching gave him, and he still retained his ward-classes after ill-health had obliged him to give up operating. Mr. Robinson also wrote with a clear and trenchant style, but apart from an article in Quain's Dictionary and reports of cases in weekly and monthly journals his busy life gave him little time for literary work, and it is feared that his researches on the diseases of the mammary gland may remain unrecorded.

Of the personal characters which made Mr. Robinson such a popular figure at his school an intimate friend writes:—

"Even a stranger might have realised the mingled affection and respect with which Robinson was regarded by all at St. Thomas's if he happened to be a guest in the operating theatre and saw the surgeon, the dressers, and the nurses all bubbling together over some little touch of humour on the part of their chief which he unaffectedly enjoyed at least as much as the rest. This element of simplicity in his character made it possible for him to enter naturally into the social life of the school. His participation in the staff race was a feature at the annual sports. In his student days he had been a regular playing member of what might be called the 'ever-victorious' Rugby football team of the 'eighties,' and this was one of his most cherished recollections."

Mr. W. H. Battle sends us a further appreciation:—

"Mr. H. B. Robinson was a man whose earnestness of endurance was crowned by thoroughness of performance. There were few days on which he spent less than five hours at the operation table, and those associated with him appreciated more and more his accuracy of diagnosis and judgment, as well as his skilful operative work. There can be little doubt in the minds of those who know the immense amount of work which he did during the last three-and-a-half years of his life, that he sacrificed himself on the altar of duty quite as much as the man who goes abroad and dies there from one of the risks incidental to warfare in the field. Those of us who are left have to mourn the loss of a good colleague and faithful friend. His quiet unassuming life was an example to the profession; he let his efficient performance of duty and practical knowledge speak for him. Shortly before his illness necessitated absolute retirement he had the satisfaction of admitting his only son to the Cheselden Lodge of Freemasons, of which he himself was Master at his death."

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—As the result of the recent Final Examination, held from July 9th to 22nd, the following candidates were approved in the subjects indicated, but are not eligible for diplomas:—

Medicine.—W. M. Anthony, St. Thomas's; B. A. Astley-Weston, Bristol; P. Banbury, St. Thomas's; L. H. Bartram and F. T. Burkitt, Cambridge and St. Bart.'s; D. Campbell, M.D. New York, New York; Elizabeth Casson, Bristol; N. Cheua, Middlesex; C. B. Clarke, Cambridge and Univ. Coll.; W. Davies, London; Mary Day, St. Mary's; G. B. Dowling, Guy's; C. C. R. Downing, Cambridge and Univ. Coll.; H. Franklyn, Cambridge and St. Bart.'s; L. E. Frazer, Cambridge and St. Thomas's; W. A. Freedman, M.B., B.S. Durh., Durham; C. F. Good, London; Dorothy Winifred Gowers, Royal Free; W. R. G. Harris, London; F. Y. Hasaballa, Charing Cross; A. T. Hawley, Cambridge and St. Thomas's; E. T. Holden, Birmingham; A. W. Holgate, Univ. Coll.; A. St. G. J. M. Huggett and G. R. Hull, St. Thomas's; E. H. Johnson, Manchester; R. D. Jones, St. Bart.'s; F. W. Kemp, Charing Cross; H. W. Kerfoot, M.D., C.M. McGill, McGill; P. C. Livingston, Cambridge and London; T. D. Llewelyn, Cardiff and St. Thomas's; W. K. McKay, Guy's; T. C. McKenzie, Birmingham; C. F. McLean, Cambridge and St. Thomas's; C. D. Maitland, St. Thomas's; G. Millar, St. Bart.'s; P. Morcos, St. Mary's; W. A. W. Parkes, Birmingham; E. A. Pearson, London; H. J. A. Pollard, Cambridge and St. Bart.'s; H. L. Pridham, St. Bart.'s; F. A. Prosser, Liverpool; F. W. Reitz, Guy's; E. D. T. Roberts, St. Thomas's; L. I. Roberts, Univ. Coll.; R. H. O. B. Robinson, Cambridge and St. Thomas's; R. J. Saunders, London; Hilda Norah Shufflebotham, M.B., Ch.B., B.Sc. Birm., Birmingham; C. G. D. Siggs, Guy's; J. Spira, Brussels and St. Thomas's; F. H. Stuttaford and A. C. Teuten, St. Mary's; J. E. de V. van der Merwe, Guy's; W. E. M. Wardill, M.B., B.S. Durh., Durham; F. F. Wheeler, St. Mary's; E. C. Whitehall-Cooke, St. Thomas's; J. M. Winnett, London; and G. Winter, Birmingham.

Surgery.—J. C. Andrews, Cambridge and London; J. B. Barnett, Birmingham; H. F. G. Berncastle, Guy's; W. L. Berry, St. Bart.'s; J. M. Brydson, Durham and London; H. C. H. Bull, St. George's; W. M. Casper, Cambridge and St. Bart.'s; R. A. Cooke, Liverpool; C. F. Eminson, Charing Cross; G. A. Fisher, Cambridge and St. Bart.'s; G. A. Goolden, Cambridge and St. Thomas's; P. E. Gorst, Liverpool; F. Gray, B.A. Cantab., Cambridge and St. Bart.'s; E. G. T. Holden, Birmingham; C. M. Jones, Cambridge and Liverpool; E. G. Joseph, Edinburgh; V. J. F. Lack, London; P. Lloyd-Williams, St. Thomas's; G. L. Lyon-Smith, Cambridge and St. Bart.'s; H. C. McAlister, M.B. Tor., Toronto; E. K. Macdonald, St. Thomas's; R. S. Ralph, Guy's; A. H. J. Smart, Cambridge and St. Thomas's; E. E. R. Spurway, M.B., Ch.B. Birm., Birmingham; A. E. Ward, St. Thomas's; W. E. M. Wardill, M.B., B.S. Durh., Durham; and R. Wolff, B.Sc. Cape Univ., L.D.S. Eng., Middlesex.

Midwifery.—I. M. Abd-El-Said, Univ. Coll. Hosp.; N. S. Alder, St. Thomas's; J. H. Allan, Liverpool; G. W. Almeyda, London; Marjorie Back, Royal Free; H. Barbash, Cambridge and St. Bart.'s; G. A. E. Barnes and B. F. Behman, Univ. Coll.; F. J. Bennett, Cambridge and Manchester; M. Z. Bochenek, London; G. A. A. Bradnack, Guy's; P. J. Briggs, Cambridge and Guy's; Ella Marianne Britten, St. George's; Anna Bridget Broman, Royal Free; H. Brookman, Middlesex; O. H. Brown, Charing Cross; J. M. Brydson, Durham and London; D. Campbell, M.D. New York, New York; Elizabeth Casson, Bristol; Marjorie Carnsew Chappel, Royal Free; H. B. Cole, Cambridge and St. Bart.'s; P. C. Collyns, St. Bart.'s; R. A. Cooke, Liverpool; J. C. Davies, St. Bart.'s; Mary Day, St. Mary's; J. P. de Silva, London; J. C. Dixey, Oxford and St. Bart.'s; G. B. Dowling, Guy's; R. H. Emmett, Cambridge and St. George's; R. S. Foss, St. Thomas's; E. J. Gaffney, L.D.S. Eng., Guy's; J. F. Gaha, Dublin; W. Göthe, Middlesex; C. Grantham-Hill, Cambridge and London; F. Gray, Cambridge and St. Bart.'s; C. H. Gunasekara, Cambridge and Middlesex; B. C. Hardiman, M.D., C.M. Queen's Univ., Queen's Univ., Ont.; Joan Margaret Redford Harris, Royal Free; O. S. Hillman, Middlesex; H. C. Hopkinson, Cambridge and Manchester; C. McC. Jones, Cambridge and Liverpool; E. G. Joseph, Edinburgh; H. Kamal, King's College; H. D. Kelf, St. Bart.'s; M. A. Keshvalu, Hyderabad and Univ. Coll.; R. B. P. Lansdown, Cambridge and Guy's; F. W. Lemarchand, St. Bart.'s; G. L. Levin, Univ Coll.; L. Lyne, Guy's; Elizabeth Esther McCulloch, Liverpool; E. D. Macmillan, St. Bart.'s; Malati Madgavkar, Birmingham; A. A. E. S. Mansour, Charing Cross; T. Mensa-Annan, Cambridge and King's College; A. Mishriky, St. Mary's; G. T. Mody, M.B., B.S. Bombay, Bombay and Bristol; Eva Morton, Royal Free; C. F. Newman, Birmingham; V. A. Newton, Birmingham; W. H. Palmer, Cambridge and St. Thomas's; C. A. Paulusz, L.M.S. Ceylon, Ceylon and Guy's; G. A. Pennant, Cardiff and Bristol; F. L. Pickett, Manchester; F. A. Prosser, Liverpool; Enid Margaret Mary Quaile, Royal Free and St. Mary's; W. Reikan, Manchester; B. R. Reynolds, Cardiff and Bristol; Hilda Winifred Richards, St. George's; W. A. Richards, Cardiff and Charing Cross; J. C. R. Richardson and H. S. Robinson, London; J. C. Russell, Cambridge and London; Hilda Nora Shufflebotham, M.B., Ch.B., B.Sc. Birm., Birmingham; L. A. Simaika, St. Bart.'s; J. V. A. Simpson, Middlesex; Mary Sylvia Stocks, Royal Free and St. Mary's; C. E. Taylor, Cambridge and Univ. Coll.; A. L. Telling, Leeds; D. V. Townshend, Birmingham; R. W. Warrick and E. R. Webb, Guy's; G. A. O. White, Middlesex; R. L. Williams, Cambridge and St. Bart.'s; Ethel Dorothy Willis, Manchester; M. Wong, Cambridge and St. Thomas's; S. C. Woodhouse, London; C. Young, Middlesex; and F. Young, Guy's.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL.—During next week clinics will be held each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.

WOMEN STUDENTS AT UNIVERSITY COLLEGE HOSPITAL.—The General Committee of University College Hospital has decided to admit women students to the hospital and medical school from Oct. 1st next. The Faculty of Sciences at University College has been open to women since 1877, and the Faculty of Medical Sciences since October, 1917. Women will thus now be able to take their whole medical course at University College and University College Hospital, and to avail themselves of the arrangements made with the National Hospital for the Paralysed, Queen-square, the Hospital for Sick Children, Great Ormond-street, and the Central London Ophthalmic Hospital, Judd-street, for students of University College Hospital to carry out a portion of their clinical studies at these special hospitals.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—This association held its annual meeting at its offices, 34, Copthall-avenue, E.C. 2, on June 27th. As the President, Surgeon-General G. J. H. Evatt, C.B., was detained on military duties the chair was taken by Dr. A. A. Napper. The annual report showed considerable activity and an addition of 31 new members. The rules were revised and a discussion on the Poor-law and its future followed. The honorary secretary, Dr. A. Withers Green (City of London) read a short paper on the Future of the Poor Law. The subject was taken up by Lieut.-Col. C. Thackray Parsons, R.A.M.C., of Fulham Military Hospital, at some length, as well as by Dr. E. Claude Taylor, of the Hampstead General Hospital. Considering war conditions the meeting was well attended and the interest sustained. A full report will be found in the coming number (August 10th) of the *Medical Officer*, published at 36, Whitefriars-street, E.C., which is sent free to each member of the association whenever it contains an inset from the Poor-law Medical Officers' Association. Council meetings are held quarterly at the above offices. The annual subscription is 5*s*. It would be well if the Poor-law medical officers of each county or district were to meet together to discuss their interests, especially in view of probable coming changes, and send their conclusions to the honorary secretary.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on July 24th, with Sir Francis H. Champneys in the chair. Certain midwives were struck off the roll, the following charges amongst others having been brought forward:—

A midwife being in attendance at a confinement she neglected to disinfect her hands and forearms on each occasion before touching the generative organs of the patient, as required by Rule E. 4; she neglected to wash the patient's external parts with soap and water and then to swab them with an efficient antiseptic solution (1) before making the first internal examination; (2) after the termination of labour; (3) during the lying-in period, as required by Rule E. 8. A child suffering from inflammation of, and discharge from, the eyes the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5). A midwife neglecting to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14; neglecting to enter her records of pulse and temperature in a notebook or on a chart carefully preserved, as required by Rule E. 14. Not being scrupulously clean in every way, as required by Rule E. 2, and not keeping her register of cases as required by Rule E. 24. Having been in contact with a person suffering from puerperal fever the midwife neglected to notify the local supervising authority thereof, as required by Rule E.22 (1) (e); that in the years 1917 and 1918, with intent to avoid inspection by the local supervising authority, she falsely represented to the Inspector of Midwives of the London County Council that she was not practising or intending to practise as a midwife, but only as a maternity nurse under medical practitioners. Medical aid having been sought for a patient the midwife neglected to notify the local supervising authority thereof, as required by Rule E. 22 (1) (a); she did not on each occasion when attending the patient wear a clean dress of washable material, as required by Rule E.2. A child suffering from serious skin eruptions marked by the formation of watery blisters, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5); discontinuing her attendance at a time when the conditions of both mother and child were abnormal, in disregard of Rule E. 12, and entering in her chart lists of temperature and pulse purporting to record the daily temperature and pulse of the patient, well knowing that such entries were false.

At a meeting held on July 25th a letter was considered from the medical officer of health for the county of Durham asking:—

(*a*) Whether any objection can be raised to a registered medical practitioner employing a certified midwife to attend his midwifery cases, the midwife being paid a fixed salary for her attendance, including the collecting of fees due to her employer and paying them over to him. (*b*) Whether in such a case the midwife is bound to continue her attendance on the patient for ten days after the confinement or can she hand over the conduct of the case during the lying-in period to her employer. (*c*) What action should be taken by a county council desirous of appointing a subsidised midwife in a district not adequately provided with trained midwives where the local medical practitioners object to her appointment unless they receive a guarantee for the payment by the county council of their fees when called in on the advice of the midwife, whether the patient can afford to pay the fee or not.

The Board decided that the reply be:—

(*a*) That there is no objection to such an arrangement. (*b*) That under the circumstances specified the midwife is bound to attend for the period of ten days after the labour. (*c*) That as the County Council subsidises the midwife it ought to hold itself responsible for the payment of the doctor when required.

It was unanimously resolved that in the opinion of the Board it is desirable to pass the following resolutions, to come into effect if and when Clause 10 of the Midwives Bill, 1918, becomes law:—

(*a*) That having regard to the equivalent value of the standards of training and examination required by the Central Midwives Board for Scotland and by this Board it be an instruction to the secretary to admit to the Roll of Midwives, subject to compliance with the terms and conditions of Section 10 of the Midwives Act, 1918, any woman holding the certificate of the Central Midwives Board for Scotland in virtue of having passed the examination of that body, and to report his action to the Board. (*b*) That in the case of a woman applying to be certified under Section 10 of the Midwives Act, 1918, by reason of any qualification other than that of holding the certificate of the Central Midwives Board for Scotland in virtue of having passed the examination of that body, the secretary do report thereon for such action to be taken as the Board may deem expedient.

BRITISH SCIENTIFIC PRODUCTS EXHIBITION.—Under the auspices of the British Science Guild an exhibition of four weeks' duration will be held at King's College, London, during August and September, with the object of emphasising the need for scientific research and for the application of its results to the arts and industries. The exhibits will include chemical, electrical, surgical, bacteriological, and pathological appliances, optical apparatus, and various processes in food production and conservation, with the intent to show that by the combination of science and industry this country "has done nearly as much in the four years of war as the Germans did in the preceding 40"—this being the claims of the organisers.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Medical Treatment of School Children.

THE Lords amendments to the Education Bill have been agreed to by the House of Commons. A new clause setting out the provisions as to medical treatment of school children has been thus assented to in the following terms:—

"A local education authority shall not in exercise of the powers conferred upon them by paragraph (*b*) of Subsection (1) of Section 13 of the Education (Administrative Provisions) Act, 1907, or by this Act, establish a general domiciliary service of treatment by medical practitioners for children or young persons and in making arrangements for the treatment of children and young persons a local education authority shall consider how far they can avail themselves of the services of private medical practitioners."

EDITORIAL NOTICE.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

Communications, Letters, &c., to the Editor have been received from—

A.—Association of Certifying Factory Surgeons, Manchester, Hon. Sec. of; Association of Public Vaccinators of England and Wales, Lond.; Col. J. G. Adami, A.D.M.S.

B.—Capt. W. Brown, R.A.M.C.; Mrs Cloudesley Brereton, Lond.; Dr. P. Bousfield, Lond.; Board of Agriculture and Fisheries, Lond.; Dr. M. K. Barradah, Cairo.

C.—Capt. C. M. Craig, R.A.M.C.; Lieut. T. E. Coulson, R.A.M.C.; Colonial Office, Lond.; Private Sec. of; Mr. A. C. Chapman, Lond.; Dr. W. Carr, Lond.; Dr. E. L. Collis, Lond.; Dr. W. L. Cowardin, Oban; Capt. D. W. Carmalt-Jones, R.A.M.C.(T.)

D.—Dr. F. J. Devoto, Kelantan.

E.—Dr. G. S. Earl, Plymouth; Dr. J. S. Eakins, Lond.

F.—Miss P. Fingland, Liverpool; Sir W. M. Fletcher, Lond.

G.—Dr. L. Guthrie, Ockley.

H.—Capt. E. R. Hunt, R.A.M.C.; Dr. D. Harmer, Lond.; Capt. E. Hindle, R.E.

J.—Dr. R. Johnson, Lond.

L.—Dr. A. S. Leyton, Oxford; Local Government Board, Edinburgh; Local Government Board, Lond., Medical Officer of; Dr. T. Lumsden, Lond.

M.—Dr. H. Mallins, Watton; Dr. H. C. Miller, Lond.; Dr. E. McIntyre, Mitcham; Ministry of Information, Lond.; Miss J. Metcalfe, Newcastle-on-Tyne; Major D. G. Marshall, I.M.S.; Mr. G. Mayall, Bolton; Capt. F. A. Mosse, R.A.M.C.

N.—National League for Health, Maternity and Child Welfare, Lond.; *Nursing Times*, Lond., Editor of.

O.—Mr. H. C. Orrin, Lond.; Mr. J. Offord, Lond.; Dr. T. T. O'Farrell, Dublin.

P.—Dr. F. W. Pilkington, Kencott; Major L. G. Parsons, R.A.M.C.(T.); Major A. W. Pirie, C.A.M.C.; Major H. P. Pickerill, N.Z.M.C.

R.—Mr. N. Richardson, Lond.; Dr. H. S. Reynolds, Wisbech; Mr. G. J. Rayner, Lond.; Dr. H. F. Renton, Doncaster; Mr. P. B. Roth, Lond.

S.—Mrs. I. E. Speak, Halifax.

T.—Mr. H. B. Tawse, Nottingham; Lieut.-Col. E. N. Thornton, S.A.M.C.; Dr. A. H. Thompson, Lond.; Mr. A. Thornton, Marlborough.

V.—Vitamogen, Ltd., Lond.; Mr. S. K. Vaidya, Lond.

Offices: 423, STRAND, LONDON, W.C. 2.

Appointments.

BOURNE, A. W., M.B., has been appointed Temporary Obstetrician and Gynæcologist at the Municipal Hospital of the Willesden Urban District Council.

HUNTER, ALLISON MARY, Temporary Resident Assistant Physician at Ruchill Hospital, Glasgow.

Vacancies.

For further information refer to the advertisement columns.

Birmingham University.—Sen. Demonstrator of Anatomy. £250.
Blackburn County Borough.—Two Asst. M.O.H. £500.
Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.
Bramcote Sanatorium, Nuneaton.—Res. M.O. £300.
Brighton County Borough Asylum, Haywards Heath.—L.T. Asst. Res. M.O. £7 7*s.* per week.
Brighton, Royal Sussex County Hospital.—Jun. H.S. £80.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.
East Ham Education Committee.—Temp. Asst. School M.O. £350.
Glasgow, Govan District Asylum, Cardonald.—Sen. Asst. M.O. Also Locum.
Great Northern Central Hospital.—Casualty Officer. £200.
Manchester, Ancoats Hospital.—Sen. H.S. £250.
Manchester County Asylum, Prestwich.—L.T. £7 7*s.* per week.
Manchester Royal Eye Hospital.—Sen. H.S. £120.
Middlesex Education Committee.—Asst. School M.O. £400.
Middlesex Hospital, W.—Obstet. and Gynæco. H.S.
Newcastle-upon-Tyne Education Committee.—Asst. School M.O. £350.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Anæsthetists.
Norwich, Norfolk and Norwich Hospital.—H.S. £400.
Nottingham General Hospital.—Two Female H.S. £250.
Nottingham, Ransom Sanatorium, Mansfield.—Res. M.O. £250.
Notts Education Committee.—Asst. Sch. M.O. £400.
Rainhill, nr. Liverpool, County Asylum.—Temp. Asst. M.O. 7 gns. wk.
Rochdale Infirmary and Dispensary.—Jun. H.S. £150.
Sheffield Royal Infirmary.—Res. S.O. £200. Also H.S. £150.
Stoke-on-Trent County Borough.—Asst. Tuberc. O. £360.
Sunderland, Durham County and Sunderland Eye Infirmary.—Locum.
Walsall General Hospital.—Female H.S. and Anæs. £175.
West London Hospital, Hammersmith-road, W.—H.P. £4 4*s.* per week.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.

Births, Marriages, and Deaths.

BIRTHS.

ALDRIDGE.—On July 31st, at Magdalene House, Glastonbury, Somerset, the wife of F. J. Aldridge, B.A., B.M., B.Ch. Oxon., of a son.

BENSON.—On August 2nd, at "Elmhurst," Devonshire-road, Sherwood, Nottingham, the wife of Lieutenant-Colonel W. A. Benson, D.S.O., T.D., R.A.M.C., of a son.

BUSHE.—On July 31st, at St. Hilary-terrace, Stoke, Devonport, the wife of Fleet Surgeon C. K. Bushe, R.N., M.D., of a son.

CHOPPING.—On August 4th, at Devonshire-gardens, Glasgow, the wife of Colonel Arthur Chopping, C.M.G., R.A.M.C., of a daughter.

HERDMAN-NEWTON.—On July 28th, at Tremorvah Lodge, Truro, the wife of Surgeon R. H. Herdman-Newton, R.N., of a son.

HILTON JONES.—On July 24th, at "Penygarth," Harlech, North Wales, the wife of Major R. O. Hilton Jones, M.C., R.A.M.C., of a son.

TATE.—On July 29th, the wife of Captain D. Laurence Tate, R.A.M.C., of a daughter.

MARRIAGES.

AITKEN—CHAPMAN.—On July 31st, at Commonhead House, Airdrie, Robert Aitken, M.B., Ch.B., Surgeon, Royal Navy, to Marion Adam, third daughter of Mr. and Mrs. William W. Chapman, Commonhead House, Airdrie.

DENNING—EMDIN.—On July 23rd, at St. Paul's Cathedral Church, Valletta, Malta, Surgeon Frederick Arthur Vere Denning, Royal Navy, to Daisy, only daughter of Engineer Captain A. R. Emdin, C.M.G., R.N.

FINDLAY—FORGAN.—On July 31st, at the British Consulate, Mukden, and at Wylie Memorial Church, Liaoyang, the Rev. James W. Findlay, M.A., to Margaret Rose Forgan, M.A., M.B., Ch.B.

DEATHS.

HOSKIN.—On August 5th, Theophilus Hoskin, M.R.C.S. Eng., L.R.C.P. Lond., aged 62.

ROBINSON.—On July 31st, Henry Betham Robinson, M.D., M.S., F.R.C.S., Major, R.A.M.C.(T.), Surgeon to St. Thomas's Hospital, of 1, Upper Wimpole-street, W., aged 57 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE Great Northern Central Hospital has received from the trustees of the will of Lieutenant Alexander Wernher the sum of £500 from the amount bequeathed by him for division amongst charities.

THE Combined Universities Conservative and Unionist Association has adopted Mr. Herbert G. Williams, M.Sc., as their candidate for the Parliamentary Division, which comprises the Universities of Durham, Manchester, Liverpool, Leeds, Sheffield, Birmingham, and Bristol.

Notes, Short Comments, and Answers to Correspondents.

THE SIGNIFICANCE TO MEDICINE OF THE CREATION OF A HEBREW UNIVERSITY AT JERUSALEM.

THE recent laying of the foundation stone of a Hebrew University at Jerusalem reveals the true spirit of the Jewish people. From the earliest times it has been considered by Jews to be a sin to live in a town in which there was no school, and now the provision, amidst the clash of arms, of means for higher education in the "place in the sun," which the British Government has promised to restore to them, expresses in the most emphatic manner the high value that the Jews continue to attach to intellectual and moral development.

Since antiquity the healing art has specially appealed to the Jew. In Talmudic times, although there was no indigenous school of Jewish medicine, enthusiasm for medical lore was great, partly because such knowledge was daily required for the elucidation of ritual observance. The administration of the dietary laws, for instance, demanded a thorough knowledge of morbid anatomy and pathology to be able to recognise post mortem whether an animal that was killed for food had previously suffered from disease likely to shorten its life, and thus render it *t'rephа* or unfit for human consumption. The ancient Jewish Court of Justice often employed the services of a medical assessor in matters of medico-legal importance. Although much of the medical knowledge of the Talmudic period was imbibed by the Jews from their Roman and Greek contemporaries, yet there can be no doubt that they contributed a great deal to all the branches of medical science, for their opinions were often opposed to those of the Greek and Roman physicians.

In early post-Talmudic times—i.e., about the fifth or sixth centuries—laws were promulgated forbidding Jews to practise medicine, but in the seventh century the Arabian medical schools contained many Jewish students and teachers. In Egypt and Northern Africa most of the Court physicians between the sixth and the fourteenth centuries were Jews.

In modern and recent times the number of Jews who have distinguished themselves in medicine (either as practitioners or as investigators) and cognate sciences all over the world is out of all proportion to their population. The recital of such names as Henle, Remak, Cohnheim, Cohnstein, Zunz, Hermann, Hirsch, Romberg, Weigert, Weichselbaum, Ehrlich, Frankel, Neisser, Wassermann, Senator, Israel, and Baginski is sufficient confirmation of the statement that German medicine is to a large extent Jewish medicine. In the United States the names of Flexner, Jacques Loeb, Rosenau, and Solis-Cohen stand out pre-eminently; Italy with such men as Lombroso and Otolonghi; and even Russian medicine has had famous Hebrew names, although until the Revolution Jews were practically debarred from entering the universities.

With such a supply of talent amongst Jews it should not be difficult to fill the staff of a Hebrew University. Whether the creation of a special Jewish faculty will react beneficially upon medical science is difficult to foretell. An eminent Hebrew nationalist writer, when speaking of "the perennial spring of living creative power" among Jews, deplores the scattering of the Jewish genius among the cultures of other nations, instead of converging to a focus in a national culture of their own. The creation of a specifically Jewish place of higher study will afford the necessary facilities to those who possess the brains but lack the "golden key" or some other requirement for admission into a university. The intensive cultivation produced by concentration of effort under specifically Jewish surroundings will help some of that dormant Jewish talent to germinate which now dies for lack of stimulus. For this reason the medical faculty all over the world will welcome the establishment of a Hebrew University.

VITAMINES AND COOKING.

To the Editor of THE LANCET.

SIR,—I have charge of two grandchildren, aged 6 and 3, who enjoy excellent health on a diet of porridge, bread-and-butter and jam, vegetables, eggs, boiled milk, and a little meat, and occasional quantities of raw fruit. Except for the butter and fruit this is all cooked food. I know also some working-class families who live in good health on bread, margarine, potatoes, jam, tea, trifling quantities of milk, and meat once a week. Here again nearly all the food is cooked. These children ought not to be in such good health if it be true that vitamines, on the one hand, are necessary in small quantities for good health, and on the other that they are destroyed at a temperature of 100° C.—that is to say, by cooking. It is important that, if cooking destroys vitamines, the public should be told the evidence on which the statement is based. There is much evidence to the contrary, as in the case of the good health of the Scotch and Irish poor of past times, who lived on little else than cooked oatmeal and potatoes. The evidence of the prevention of beri-beri by a change from a diet of polished to unpolished rice is even more damaging to the view that vitamines are destroyed by cooking, for in both cases the rice is cooked.—I am, Sir, yours faithfully,

WALTER KIDD, M.D., F.R.S.E.

Alum Bay, Isle of Wight, August 3rd, 1918.

*** This important question was discussed in our columns several years ago (*vide* annotation, THE LANCET, March 21st, 1914, p. 841), and correspondence which followed upon it (March 28th (p. 931) and April 4th (p. 1002), 1914). It then seemed clear that some vitamines at all events were not destroyed at 100° C. Further studies since made suggest that though the heat employed in cooking impairs the efficiency of certain accessory food substances, it does not destroy them altogether. This is, as our correspondent points out, obviously the case with rice, since only cooked rice is consumed.—ED. L.

OCCUPATIONS FOR WOMEN.

UNDER the title of "Women's Work in War Time," Messrs. T. Werner Laurie, London, have issued (at the price of 1s.) a new edition of a useful little book compiled by Mrs. H. M. Usborne giving a brief sketch of occupations open to women in all spheres of life, including details of the training necessary for obtaining the appointments, its cost, and the emoluments which may be expected. The second part of the book contains short articles by various writers on such topics as "War Work and Future Prospects," women in the Civil Service and in agriculture, the care of school children, welfare work, and Red Cross work in the war.

PARASITIC MANGE.

A LEAFLET has been issued by the Joint Committee of the Board of Agriculture and Ministry of Food, calling attention to the prevalence of parasitic mange at the present time and the importance of the notification of the disease to the police by owners of animals. By an amendment introduced this year to the Order of 1911 an animal affected with mange may still be worked subject to certain conditions, but failure to notify involves a penalty of £20. Rules as to the prevention and cure of mange in horses are contained in Leaflet No. 8 issued free of charge by the Joint Committee, 6A, Dean's Yard, London, S.W.1. There is no doubt that parasitic mange has spread lately owing to the wide movement of horses, to indifferent care on the part of carters and horsemen, and to unhealthy nutrition in the horses themselves resulting from poor feeding. The revival of the rag and bone industry and the demand for small ponies may have been contributing factors. Since acariasis is communicable from animals to man precautions are necessary, especially to prevent men of the Army Veterinary Corps contracting scabies from the horse.

A "DROP-FOOT" SUPPORT.

Mr. C. H. Hough, medical officer in command of the Ethel Hedley Auxiliary Orthopædic Hospital, Calgarth Park, Windermere, calls our attention to an ingenious apparatus for supporting a "drop-foot," which is comfortable to wear and neat in appearance. The appliance consists of an anklet, made of leather or other material, which supports a spring attached to a metal loop which buckles round the instep. The spring which holds the instep band can be easily adjusted to any required position. The inventor is Mr. J. M. Sladen, Cleeve Howe, Windermere.

NECESSITOUS LADIES' HOLIDAY FUND.

THE war has reduced the incomes of many governesses, nurses, actresses, and other members of the poorer professional classes, which this Fund normally benefits. The Fund itself has suffered financially. A letter signed by the treasurer, Miss Constance Beerbohm, appeals for support in order to make a holiday possible for ladies unable to earn in the summer months. For those to whom a holiday is out of the question relief is supplied in the form of food, medicine, and clothing. The address of the treasurer is 48, Upper Berkeley-street, London, W.1.

AN OVERWORKED MEDICAL MAN.

AN inquest was recently held at Camborne, Cornwall, relative to the death of a child who died before medical attendance could be procured. The medical witness stated that he was working from 12 to 16 hours daily; recently about one-third of the population of Camborne had been ill, and he was then sometimes employed for nearly the 24 hours. He added that it seemed absurd that Camborne, the largest town in Cornwall with a population of about 16,000, should have only two medical practitioners. The coroner suggested that the urban council should apply to the Army authorities for the release of an Army surgeon, and the jury endorsed the proposition.